



Editorial Style Guide for *Park Science* and *Natural Resource Year in Review*

Natural Resource Report NPS/NRPC/NRR-2006/004

Native grasses: Contributors to historical landscapes and grassland-bird habitat in the Northeast

As many national parks in the Northeast pursue their missions of recreating open landscapes where important historical events took place, managers are using native grasses to replace forests that grew up on these sites in the 20th century and to restore open spaces now occupied by nonnative, cool-season grasses. This initiative reflects National Park Service policy to restore native species and has ramifications for wildlife, particularly grassland birds.

Before European settlement, forests dominated the northeastern U.S. landscape. Grasses grew where trees could not, on mineral barrens (insert brief explanation) and wetlands or in spots that indigenous people had cleared. Some native, cool-season grasses occurred in the Northeast, but were less common than [?] native, warm-season grasses, perennials that sprout when the weather warms up, reach maturity in late summer, and return to dormancy before the onset of winter. Little bluestem (*Schizachyrium scoparium*), broomsedge (*Andropogon virginicus*), purpletop (*Tridens flavens*), indiagrass (*Sorghastrum nutans*), eastern gamagrass (*Tripsacum dactyloides*) and switchgrass (*Panicum virgatum*) are some of the species that resource managers in the Northeast are learning to restore today. They grow in clumps or bunches, never forming a blanket of turf, and have the ability to put down long taproots, penetrating at least 6 feet (1.8 m) into the subsoil. The long roots reach needed nutrients and water, making these grasses drought tolerant and fire adapted.

Since the 1950s, farmers, homeowners, and land managers extensively planted and regularly mowed the turf-producing, nonnative, cool-season grasses, particularly cultivars of fescue such as Kentucky-31. The result was vast stretches of maintained lawns, which memorialized historical settings in the parks. Managers are now reconsidering this practice because this type of landscape, though attractive to many people, detracts from the scene's historical appearance and produces poor wildlife habitat. Additionally, mowing of these lawns is costly.

Re-creating native grassland habitat
At Appomattox Court House National Historical Park in Virginia, Resource Management Specialist Brian Eick has been experimenting with converting about 70 acres (28 ha) of fescue fields into native, warm-season grasses. Worn-out tobacco fields dotted the scene in Virginia in the 1860s, and although planting warm-season grasses does not re-create this particular landscape, it creates an ecologically viable habitat for wildlife that suggests the historical scene. Another goal of the project is to are to reduce park operating costs.

The experiment entails learning how to successfully plant and sustain native grasses and then working with local farmers to maintain the fields through the park's agricultural leasing program. Like many historical parks in the Northeast, Appomattox Court House has been using agricultural leasing since the 1940s as a tool to maintain a historical, rural character of the landscape. This program also enables local farmers to cultivate park land in exchange for services or payment. Over time, however, local farmers stopped planting the fields in crops that were grown historically, such as corn, tobacco, and wheat. Instead, to compete in the modern agricultural market, they started growing nonnative, cool-season grasses for hay production and to support cattle grazing. As a result, the cultural landscape of the park began to resemble modern agricultural land.

Park staff members have tried several techniques to establish and manage native, warm-season grasses. They started by treating existing turf with herbicide (fig. 1). Because the native grass seed is "bearded" and will not slide through standard equipment, staff borrowed a special seed drill from the Virginia Department of Game and Inland Fisheries to plant the seed (fig. 2). They found that the germination rate improved if existing thatch was removed, promoting good contact between seed and soil. Since the park is

Comment: Change is suggested because the project is closer to restoration than enhancement. ... [1]
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Deleted: Region ...twentie...complies with ... [2]
Deleted: N...and ... [3]
Comment: Didn't grasses also grow in upland openings created by windthrow and fire? Weren't they a part of eastern deciduous forests? Add a sentence as needed to briefly address this concern. ... [4]
Comment: One reviewer commented that she is not at all familiar with native grasses of the NE; hence, the suggested edit to this and the next sentence. ... [5]
Deleted: There were s...the species that we know best and are learning to restore today are the ... [6]
Comment: One reviewer says bluestem is actually Schizachyrium scoparium. Correct? ... [7]
Deleted: Andropogon ...s ... [8]
Deleted: se... They... eventually...or more ...can find...e...resistant ... [9]
Deleted: It is ...however, ... that have been planted extensively since the ... [10]
Comment: One reviewer felt mention of gentrification was not relevant. ... [11]
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Comment: One reviewer questioned whether farmers raised cattle in t' ... [18]
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Deleted: s...on't...allowing the seed...soil ... [20]

ON THE COVER

A draft manuscript for *Park Science*, marked-up to reflect peer review and editorial style for the publication.

Editorial Style Guide for *Park Science* and *Natural Resource Year in Review*

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Natural Resource Report NPS/NRPC/NRR-2006/004

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In memory of Donna O’Leary, founder and coordinator of the Natural Resources Publication Program (1989–1995), accomplished technical editor, friend, and teacher.

Katie KellerLynn, research associate with Colorado State University, is a cooperator to the National Park Service under cooperative agreement CA 1200-99-0009, TO J2370-03-0135.

The Natural Resource Publication Series addresses topics of interest and applicability to a broad audience among the National Park Service (NPS) and others in the management of natural resources, including the scientific community, public, and NPS conservation and environmental constituencies. Manuscripts are peer-reviewed to ensure the information is scientifically credible, technically accurate, appropriately written, and designed and published in a professional manner.

Natural Resource Reports are the designated medium for disseminating high-priority, current natural resource management information with managerial application. This series targets a general, diverse audience, and may contain NPS policy considerations or address sensitive issues of management applicability. Examples of the diverse array of reports published in this series are vital signs monitoring plans, “how to” resource management papers, proceedings of resource management workshops and conferences, annual reports of programs or divisions of the Natural Resource Program Center, resource action plans, fact sheets, and regularly published newsletters.

Views and conclusions in this report are those of the authors and do not necessarily reflect policies of the National Park Service. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the National Park Service.

Comments and criticism should be directed to the first author: jeff_selleck@nps.gov.

This publication is available from www.nature.nps.gov/ParkScience/ (“Guidance” link) and www.nature.nps.gov/YearInReview/ (“Author Guidelines” link).

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Introduction

The application of sensible rules for writing and editing is important for authors and editors of National Park Service publications. Goals of clarity and consistency, minimizing barriers to understanding, are all but impossible without well-reasoned guidelines that offer help in resolving the many questions that arise in the editorial process. For example, authors and editors need to carefully consider the subject matter (e.g., science findings, general park information, management planning, administrative history), audience (technical or nontechnical, broad or targeted), and many other factors to determine the best presentation of the material and to ensure a written product that will successfully convey its message. This editorial style guide is intended to help authors and editors find a consistent and effective approach in communicating both technical and nontechnical information about the management of U.S. national parks, particularly natural resource management. It is tailored to the editorial purposes of *Park Science* and *Natural Resource Year in Review*.

In general, *Park Science* presents science findings in the context of park management in a semi-technical writing style, which is also suitable for lay audiences; *Year in Review* takes a popular approach to presenting various science and natural resource management topics. Though adapted to these titles, this guide may also have application to other types of NPS natural resource-related publications, including Natural Resource Reports and Natural Resource Technical Reports. (Guidelines for manuscript submittal, review, approval, and publication for those series are detailed at <http://www.nature.nps.gov/publications/NRPM/index.cfm>.)

Editorial style guidelines have been in use for natural resource publications of the National Park Service since at least the inception of the Natural Resources Publication Program in 1989. As authors produced drafts for *Park Science*, Natural Resource Reports, Natural Resource Technical Reports, Scientific Monographs, and other series, questions of style and consistency in grammar, word usage, tone, and formatting arose among editors and led to informal development of a “style sheet.” This helpful

resource guided word spellings and usage and was continually expanded and modified as editors became familiar with particular terms and editorial questions related to natural resource series. Publication of this *Editorial Style Guide for Park Science and Natural Resource Year in Review* owes much of its inspiration and a large portion of its “Guide to Preferred Spelling, Usage, and Word Compounding” section to the earlier style sheet. However, this guide is more comprehensive than the style sheet, as it also attempts to address many other common and often confusing areas of editorial decision making that regularly challenge authors and editors of these publications. As our language and needs change, we anticipate the need to add to and modify this guide with new editorial solutions.

In producing this volume we have consulted numerous other style guides, adopting many rules and suggestions that apply to the goals of these publications. We list those authoritative resources in the “Adopted References” section, which follows, and have tried faithfully to document the origin of particular rules throughout this guide as practicable.

As described, this guide focuses on editorial matters concerning *Park Science* and *Natural Resource Year in Review*. Though it offers glimpses into the nature of these publications, thorough statements as to their purpose, goals, and production standards are available on the Web. Therefore, this guide should be used in conjunction with “Writing for Park Science” at www.nature.nps.gov/ParkScience/ and “Guidelines for Authors of Natural Resource Year in Review” at www.nature.nps.gov/YearInReview. Each of these Web sites is the primary source of information about the purpose, audience, contents, organization, review, grammar, tone, and production standards for each of these publications.

Adopted References

Editorial style for *Park Science* and *Natural Resource Year in Review* is based on the following references, which provide useful guidelines for consistency in the communication of science and its application to management of the U.S. national parks. Abbreviations or acronyms for many of these sources appear throughout this guide and signify the source of a particular rule; such references are often followed by a page or section number to further clarify the source. An editorial rule lacking an identified source or followed by “H” reflects “house style” and is preferred for use even though it may contradict an adopted reference.

general editorial references

- CMS *The Chicago Manual of Style*, 15th edition, 2003
(This authoritative, comprehensive work is our primary reference for questions of style and production related to preparing scholarly works for publication.)
- MW *Merriam-Webster’s Collegiate Dictionary*, 11th edition, 2003
(Our primary source for preferred spellings, word compounding and division, and usage.)
- Webster’s Instant Word Guide*, 1980
(Not cited. A secondary source for choosing suitable word divisions in conjunction with hyphenation.)
- Gregg *The Gregg Reference Manual*, 9th edition, 2001
(A secondary source for all matters of editorial style; oriented toward business writing.)
- WIT *Words Into Type*, 3rd edition, completely revised, 1974
(Not cited; used generally for grammar and other matters of style and production.)

National Park Service editorial style guidelines

- DSC *Editing Reference Manual*, Denver Service Center, National Park Service, January 2005
(Tailored to technical writing—particularly park planning—of the National Park Service, this reference is used for preferred spellings and other applicable rules.)
- HFC *Editorial Style Guide*, Harpers Ferry Center, National Park Service, November 2006
(Used for preferred spellings and other adopted rules pertinent to writing for public audiences.)

sources of specific style

- citations and documentation*
- Ecology* *Ecology*
(This journal serves as the basis for citation and documentation style, and examples of listed references in the “Documentation” section are generally from this publication. *Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers*, is a potential source for citation styles not found in *Ecology*.)

geographic names

U.S. Board on Geographic Names

(Not cited. This board determines the federally recognized place-names and spellings of geographic features in the United States and its territories. We use the search engine and general information of the Geographic Names Information System at <http://geonames.usgs.gov> to ascertain and use federally recognized names and their spellings.)

geologic terms

AGI *Glossary of Geology*, American Geological Institute, 5th edition, 2005
(This resource defines and spells geologic terms.)

ICS *International Stratigraphic Chart*, International Commission on Stratigraphy, 2006
(This resource [<http://www.stratigraphy.org/cheu.pdf>, available from <http://www.stratigraphy.org/over.htm>] clarifies subdivisions in geologic time, unit names, and their spellings and capitalization. The commission is part of the International Union of Geological Sciences.)

**scientific names
of organisms**

general

ITIS Integrated Taxonomic Information System
(Sponsored by the USDA Natural Resources Conservation Service, the Web site <http://www.itis.usda.gov> provides authoritative taxonomic information on plants, animals, fungi, and microbes of North America and the world. It is our source for scientific names and classification of these organisms.)

birds

AOU *The A.O.U. Check-list of North American Birds*, 7th edition, 1998; and 47th supplement, as published in *The Auk* 123(3):926–936.
(These references are primary sources for the taxonomy of birds from North and middle America. Published by the American Ornithologists' Union, they are available at <http://www.aou.org/checklist/index.php3> [checklist] and <http://www.aou.org/checklist/Suppl47.pdf> [47th supplement].)

additional references

United States Government Printing Office Style Manual, 2000

(No abbreviation; not cited. A comprehensive guide that facilitates the government printing process and is intended to reduce printing costs. Rules are not to be considered rigid, but may be useful in many contexts.)

Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers, 7th edition, 2006

(No abbreviation; not cited. An authoritative, comprehensive source for internationally recognized standards in the application of science style. Published by the Council of Science Editors, formerly the Council of Biology Editors.)

Basic Style Considerations

The following guidelines concern basic style considerations that authors and editors may wish to review before editing or writing for *Park Science* or *Natural Resource Year in Review*. Of a general nature, these guidelines are intended to improve uniformity in approach, consistency throughout an article, and clarity of communication.

- active voice** (H) In general, recast passive sentences in the active voice. However, some passive constructions are fine for variation in style or may even be appropriate for reporting scientific findings. Along the same lines of making sentences more active, recast “false” subjects (i.e., weak expletive introductions) such as *There are . . .* and *It is . . .* to true subjects when possible. However, retain false subjects when recasting sounds stilted.
- The National Park System includes 97 coastal units. *not* There are 97 coastal units in the National Park System.
- consistency** Be consistent throughout an article with regard to capitalization, punctuation, formatting of lists and tables, treatment of citations, and spelling. The various sections of this style guide, including “Conventions” and “Guide to Preferred Spelling, Usage, and Word Compounding,” are meant to help with consistency.
- emphasis—italics and boldface** (DSC p. vi) Avoid the overuse of boldface and italics to emphasize text. If everything is in boldface or italics, then nothing is being emphasized. Foreign or highly technical terms may be italicized if they are likely to be unfamiliar to readers. Also, key terms with special meanings to which an author wishes to direct attention may be italicized at first use.
- scientific style** Follow a scientific (vs. humanities) style with respect to numbers and terms; however, always define an uncommon term at first mention in an article. Also, avoid scientific and governmental jargon.
- sexist language** Recast sexist language but avoid “he/she” or “s/he.” If the sentence cannot be rewritten gracefully, then “he or she” is preferred. The word “she” refers to a female. Use “it” not “she” for a country, ship, car, nature, or Earth. In general, use “it” for animals, unless the article focuses on particular animals (e.g., a specific female wolf or male wolf) where using “she” or “he” would facilitate reading and comprehension.
- workforce, *not* manpower
founders, *not* founding fathers
fisher or angler, *not* fisherman
manufactured, *not* man-made
- The United States of America raised its [*not her*] flag for the last time over the Panama Canal on December 31, 1999.
- Recasting the sentence (in the plural) may be the best option for eliminating sexist language. However, make sure “their” refers to a plural subject.
- Every visitor will get a chance. *or* All visitors will have a chance.
- not*
- Everyone [singular] will get their [plural] chance to see the cave.
- sentence variation** (H) Incorporate a variety of sentence constructions from the following list into paragraphs to strengthen writing and make it more interesting.

simple sentence Most basic of sentence types, the simple sentence contains one independent clause and modifiers, and it can have one or more subjects and multiple verbs. Simple sentences convey much information in a straightforward manner. Use a preponderance of this sentence type.

The Asian strain of H5N1 has mutated in infected domestic birds to become pathogenic to birds, humans, and some other mammals.

compound sentence At least two independent clauses joined by a coordinating conjunction (*and*, *but*, *or*, or *nor*) plus modifiers are the hallmarks of the compound sentence. Balance its use with that of simple sentences.

The disease primarily affects domestic and wild birds and has not acquired the ability for sustained human-to-human transmission.

complex sentence This variant employs one independent clause and at least one dependent clause (most often introduced by *after*, *although*, *as*, *because*, *before*, *if*, *since*, *unless*, *when*, and *while*), plus modifiers. Use a complex sentence when one idea—expressed in the independent clause—is more important than the subordinated idea—in the dependent clause. Seasoned technical writers use complex sentences or compound-complex sentences (below) for about half of their sentences.

Although highly pathogenic avian influenza usually does not infect humans, more than 200 confirmed human cases of the disease have been reported since 1997.

compound-complex sentence This sentence structure includes at least two independent clauses (joined by *and*, *but*, *or*, or *nor*) and at least one dependent clause, plus modifiers. This sentence conveys the main ideas in the independent clauses and subordinate ideas in the dependent clauses.

Though it has not been documented in the United States, avian influenza is a concern for wildlife in our national parks, and the National Park Service is now conducting advance planning in order to deal effectively with a potential epidemic.

short sentences Keep sentences short and to the point. Use a majority of simple, declarative sentences.
(DSC)

simple words Use simple words.

(DSC p. v)

use *not* utilize/utilization

sign(s) *not* signage

link *not* linkage

local *not* localized (as an adjective)

superfluous words Avoid using superfluous words; those italicized in the following list indicate the redundant element:
(DSC p. v)

big *in* size

integral part

close proximity

local resident

consensus *of* opinion

very unique

filled *to* capacity

last *of all*

The park is *located* in the southern part of the state.

rehabilitate the *existing* building

Conventions

The following section discusses solutions to technical questions commonly encountered in writing and copyediting articles for *Park Science* and *Natural Resource Year in Review*.

General

abbreviations of states and U.S. territories (CMS 15.29)

In general, the full names of states and U.S. territories are spelled out (H). However, if using abbreviations is necessary because of minimal space, such as in tables or parenthetical notations, use these abbreviations:

Ala. Ariz. Ark. Calif. Colo. Conn. D.C. Del. Fla. Ga. Ill. Ind. Kans. Ky. La. Mass. Md. Mich. Minn. Miss. Mo. Mont. N.C. N.Dak. Neb. Nev. N.H. N.J. N.Mex. N.Y. Okla. Ore. Pa. P.R. R.I. S.C. S.Dak. Tenn. Tex. Va. V.I. Vt. Wash. Wis. W.Va. Wyo.

Nine states and territories are not abbreviated: Alaska, American Samoa, Guam, Hawaii, Idaho, Iowa, Maine, Ohio, and Utah.

Two-letter postal codes may be used when a zip code follows (see CMS 15.29).

academic degrees (CMS 15.21 [for format of degrees only] and H)

Follow *The Chicago Manual of Style* (15.21) for degrees: BA, MS, PhD, and MD. Avoid listing an author's academic degrees in the byline or content of an article; this avoids inconsistency of listing some but not all advanced degrees. Certain circumstances may arise in which listing an academic degree is sensible and communicates a high level of qualification in applying professional judgment. In those circumstances, information may be included in the "About the Author" section in *Park Science*. (See also "titles and surnames" below.)

By Lilian R. Smith, *not* By Lilian R. Smith PhD, PG

acronyms (DSC p.2)

Minimize the use of acronyms. Their excessive use (as shown in the following example) can be confusing. Initials for agencies, universities, and companies (not parks) are acceptable as adjectives but not generally as nouns (e.g., USGS, CSU, and IBM). However, the full name should appear at first use, followed by the abbreviation in parentheses (e.g., USDA Forest Service [USDA-FS]; later uses can simply refer to "Forest Service").

This GMP/EIS describes four alternatives for management of BICY by the NPS. BLM and USGS, as well as USFS, have participated as cooperators. After a 30-day public review, either a FONSI or NOI in conjunction with a DEIS will be prepared. That will be followed by a FEIS and a ROD.

(DSC p.26) When using established abbreviations or acronyms, do not be redundant.

the Retired Senior Volunteer Program (RSVP); redundant to say the "RSVP program"
Inventory and Monitoring (I&M) Program; use "I&M Program" not simply "I&M"

(H) The following acronyms are so common that they are acceptable as nouns. However, spell out and include acronym in parentheses at first mention:

EIS (Environmental Impact Statement)
EPA (Environmental Protection Agency)
GIS (Geographic Information System)
GPS (Geographic Positioning System)
NASA (National Aeronautics and Space Administration)

NEPA (National Environmental Policy Act)

NOAA (National Oceanographic and Atmospheric Administration)

USGS (U.S. Geological Survey)

addresses Spell out words in an address in running text. When compass directions are used in an address, they are abbreviated (e.g., NE, NW, SE, and SW) (HFC p. 2; CMS 15.35) (see CMS 15.35). However, ensure that the direction is not a street name, in which case it should be spelled out.

The White House is on Pennsylvania Avenue.

Conference participants met in a building on North Avenue SW, near the bridge.

Our friends live at 774 East [street name] 1300 South [street name] in Salt Lake City.

(HFC p. 13) **more information format** Stack information on separate lines for easier reading.

For more information

Cabrillo National Monument
1800 Cabrillo Memorial Drive
San Diego, CA 92106-3601
TTY/619-224-4140; 619-557-5450
<http://www.nps.gov/cabr>

(H) **URLs and e-mail addresses** Single and double forward slashes are used in URLs. No space should precede or follow them. If addresses run longer than a line, the break should be after a slash or period but not between two slashes. Slashes as well as backslashes (\) are used in computer directory paths; the type of slash used depends on the operating system.

The Chicago Manual of Style (6.82) points out that “careful distinction must be made among a hyphen (-), a tilde (~), and an underscore (_).” Also, e-mail addresses and URLs that include hyphens must be treated with care. According to *The Chicago Manual of Style*, “to avoid ambiguity, not only should no hyphen be added at line breaks, but no line breaks should be allowed to occur at existing hyphens.” Do not use capital letters unless the address is case sensitive (HFC). Include “<http://www>.” in URLs.

<http://www.nature.nps.gov/parksci>

jeff_selleck@nps.gov, not Jeff_Selleck@NPS.gov

author information Information about an article author in *Natural Resource Year in Review* is often shared at the end of an article and lists the author’s e-mail address (lowercased unless case sensitive, and in boldface), position title (capitalized), work location or national park unit name, and, as desired, affiliation, employer, city, and state. Items in this list are separated by commas unless particular items have their own internal punctuation or are especially complex, in which case they can be separated by semicolons (see “comma” and “semicolon” in the “Punctuation” section). Author information presented in list format does not end in a period (see “Lists” section).

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compound words *The Chicago Manual of Style* (5.92–5.93; 7.82–7.90) stresses that the use of a hyphen in forming compound adjectives (i.e., unit modifiers) should be restricted to cases of preventing ambiguity and misreading. Generally (CMS and WIT)

speaking, however, when a compound adjective precedes a noun it is usually hyphenated, whereas when a compound adjective follows a noun, it is not usually hyphenated. An author may choose to include a hyphen in a compound adjective following a noun if it appears in *Merriam-Webster's* (e.g., well-known, ill-advised), particularly if this will facilitate reading and comprehension.

a well-known conservationist	This conservationist is well-known throughout the world.
a well-intentioned idea	This idea was well intentioned.
a well-developed floodplain	The floodplain was well developed.

dates and holidays

(DSC p. 2)

AD (full caps) Use only if reference to the year is so vague as to be misunderstood; *AD* precedes and is separated from the year by one space. Also, use “between AD 1150 and 1600,” not “between AD 1150 and AD 1600.”

Britain was invaded successfully in 55 BC and AD 1066.

BC *BC* follows and is separated from the year by one space.

(H) **century** If used as part of a unit modifier, a hyphen is used.

the 19th century, *but* 19th-century landscape and a mid-19th-century landscape

(HFC p. 3)

circa/ca. Avoid writing *ca.* or *circa* in general text for publications and exhibits—rewrite or use *about* instead; *but* use abbreviation *ca.* in credit lines.

The pearlware bowl found at Ninety Six National Historic Site dates to about 1810.

F. Gabriel painting ca. 1850. Courtesy: Cedar River Historical Society.

(H) **day-month-year style** In sentences, follow the European style of dates (day, month, year, and no commas). If stating only the month and year in a sentence, no comma is needed.

This year, the month of February included 13 February 2004 (a Friday) and 29 February 2004 (a leap year).

On 7 December 1941, Japanese bombers struck Pearl Harbor.

Five companies garrisoned at Fort Sumter in June 1863.

(CMS 9.37)

decades Use “the first decade of the 19th century” or “the years 1800–1809.” Use “the 1810s” for the decade 1810–1819. Do not use an apostrophe with decades: 1860s *not* 1860’s; use all numbers: 1950s and 1960s, *not* 1950s and 60s.

(HFC p. 11)

holidays Use actual dates not traditional names, but using “Thanksgiving Day” is acceptable.

The park is closed 25 December and 1 January.

(H) **radiocarbon years** Use “carbon-14 years before present (¹⁴C yr BP)” at first mention, then “¹⁴C yr BP” in subsequent uses in an article.

(H) **ranges of dates** Separate ranges of dates by an en dash (–) (e.g., 1 November 2003–13 February 2004). (See discussion of ranges of numbers in “Numbers and Symbols.”)

etc. Avoid. Provide enough examples to make a point.

(H)

first spelling In most instances, use the first instance of spelling given in *Merriam-Webster's Collegiate Dictionary*, 11th edition (e.g., *traveling* not *travelling*; *archaeological* not *archeological*).
(H)

(HFC p. 10) **variant name** This includes historical, locally used names and misspellings; if using a variant name, show the federally recognized name first and the variant name second; the variant name must be clearly distinguished as a variant (e.g., placed in parentheses).

The ranger-guided hike proceeded toward Indian Pond (formerly Squaw Lake).

highways and roads Use official designation (as noted on maps); list official designation first and local name second in parentheses. (See also “Capitalization” section.)
(HFC)

Interstate 80 or I-80

Nebraska 7, Illinois 12

U.S. Route 1 or U.S. 1

I-75 (Alligator Alley)

Colorado 36 (Trail Ridge Road)

initials Initials followed by periods replace first and middle names. If two or more initials replace an entire name, no periods or spaces are needed (see CMS 7.66).
(CMS)

Franklin D. Roosevelt; W. E. B. DuBois

FDR and JFK

United States “United States” is usually abbreviated when it is part of the name of a government agency. “U.S.” (periods but no spaces) may be used as an adjective but not as a noun.

U.S. Geological Survey (USGS); U.S. Department of Agriculture (USDA)

U.S. government; U.S. marketplace

We live in the United States. *not* We live in the U.S.

–ly modifiers Do not hyphenate *ly* modifiers (see CMS 7.87). Compounds formed with adverbial modifiers are seldom misunderstood.

a federally listed species, *not* a federally-listed species

**National Park Service/
National Park System** The National Park Service is the name of the bureau (not agency); Department of the Interior is the name of the agency. The National Park System refers to the sites the National Park Service manages and is not interchangeable with the National Park Service. The acronym for the National Park Service (not the National Park System) is NPS, which is used as a unit modifier (adjective), not a noun. We have National Park System sites or units, not NPS sites or units. We have NPS reports, not National Park System reports.
(H)

national monument, national lakeshore, national seashore If an article includes names of National Park System units other than a national park, avoid calling the unit “the park.” Although “the park” is understood and used throughout the National Park Service, the public may not understand or even know that something other than a national park is managed by the National Park Service. We can explain that the national park/national monument/national lakeshore/national seashore/national historic site/etc. is one of 388 units in the United States that are managed by the National Park Service.

(H) At first mention, include the full name of the unit (e.g., Black Canyon of the Gunnison National Monument). For variety in subsequent uses, “the

national monument,” “the monument,” or simply “Black Canyon” may be used. Avoid using the four-letter park code in writing (e.g., “BLCA”).

- (H) **park** Use the word “park” to mean a place, not the people working there.

Resource managers want to conduct an inventory on the biological resources in the park. *not* The park wants to conduct an inventory on its biological resources.

- (H; DSC p. vi) **states listed following park names** Following the first mention of parks by name, full names of states are placed in parentheses or listed in a series separated by commas (be consistent). List states in alphabetical order separated by commas. An exception is when the state is disclosed within the same paragraph or is apparent from context.

Blue Ridge Parkway (North Carolina and Virginia)

Cumberland Gap National Historical Park (Kentucky, Tennessee, and Virginia)

Rocky Mountain National Park (Colorado)

However, some authors may prefer to list the states according to the park’s acreage.

Yellowstone National Park (Wyoming, Montana, and Idaho)

titles and surnames

(H; DSC p. 3; HFC p. 19)

Generally avoid using titles (e.g., Mr., Mrs., or Dr.). Use full name (including initials), first and last names together, or last name alone instead of a title. However, if an author wishes to show “special respect” to a park researcher, then referring to an individual by salutation and name (i.e., “Dr.” So-and-so) in the body of the article is acceptable. In some articles (e.g., professional profiles in *Natural Resource Year in Review*), a more informal style (first name only) may be adopted. In this case, first names may be used after first mention of the full names. This style should be used equally for references to men and women. (See “Capitalization” section.) In the “About the Author” section of *Park Science*, degrees and professional qualifications may be listed or discussed, as desired (see “Academic Degrees” in this section).

Maggie L. Walker organized the first black student school strike in the United States (never Maggie organized).

Carl and Lilian Sandburg lived in North Carolina. *not* Carl and Mrs. Sandburg

Greene slipped away before dawn on 20 June 1781.

word division

(H)

Use of hyphens in dividing words across two lines can improve the appearance of text on the page if done carefully; however, their use should be limited to two successive occurrences. Use *Merriam-Webster’s Collegiate Dictionary* or *Webster’s Instant Word Guide* when dividing a word, and divide it according to natural pronunciation so that the part of the word left at the end of the line suggests the whole word (see CMS 7.33–7.45; HFC p. 21). Avoid carrying over two-letter endings to a second line.

capac-ity, *not* capa-city

na-tional

ser-vice

Numbers and Symbols

numbers general rules

Use judgment and be consistent throughout the document regarding numbers. *Park Science* and *Natural Resource Year in Review* follow the “alternative rule” stated in *The Chicago Manual of Style* (9.6): Spell out only single-digit numbers (i.e., one through nine); use numerals for all others (10 and greater).

The three hikers passed by eight overlooks and 15 waterfalls.

19-year period

two-day seminar

Exceptions to this rule include the following:

1. When a number begins a sentence, always spell it out or recast the sentence.

Thirteen men and 11 women attended the conference.

Forty-five species of birds and 26 species of mammals inhabit the national seashore.

Nineteen eighty-seven was a good year for wine production in Bourgogne.

recast as The year 1987 is notable for good wine production in Bourgogne.

2. Physical quantities (e.g., distances, lengths, and areas) are presented as numerals, even when they are single digits.

The temperature on Cerro Grande, the highest peak in Bandelier National Monument, dropped 10°F (12°C) in five minutes.

Casa Grande Ruins National Monument in Arizona covers 472.5 acres (191 ha).

Yesterday two mules slid off Bright Angel Trail at about 4.5 miles (7.2 km) below the canyon rim.

Other guidelines for numbers are as follows:

1. (CMS) Use commas in numerals greater than 999, but not for page numbers, addresses, or years of four digits. Years of five digits or more do include a comma (see CMS 9.59).

Humans inhabited this cave between 18,000 BP and 5000 BP.

More than 1,000 bats live in Black Hole Cave.

2. (DSC p. 67) Delete the abbreviations “no.” and “nos.” from text references and caption titles (building ~~no.~~ 3, illustration ~~no.~~ 12, figure ~~no.~~ 2).

3. When two numbers appear together (usually in compound modifiers), spell out the first number (usually) or recast the sentence (Gregg ¶457).

She bought sixteen 40-watt bulbs. *not* She bought 16 40-watt bulbs,

4. Ordinal numbers follow the same rules as cardinal numbers (i.e., first, second, third, ... ninth, 10th, 11th, ...) (CMS 9.8).

5. When using roman numerals, make sure the meaning is clear, as they can be confusing or easily misunderstood. Use arabic numerals in citations (see “Citations and Documentation” section).

World War II

John Jacob Smith III

The volume I wanted is on the table.

6. (DSC p. 67) Include “long” or “high” when describing bridges and other structures to avoid confusion.

The 130-foot- (40-m) long bridge is 45 feet (14 m) high.

7. (CMS; Gregg p. 112) For fast comprehension, numbers in the millions or greater may be expressed as a combination of numerals and words (see CMS 9.10):

16 million (in place of 16,000,000)

Earth is 4.5 billion years old. (much easier to comprehend than 4,500,000,000)

Silver Plume granite is 1.4 billion years old.

dimensions (H) Spell out dimensions in the original unit of measure used in the study, followed by its English or metric equivalent (abbreviated in parentheses); if the original unit of measure is unknown, use English first followed by metric. Use the symbol for “by” (×), *not* a letter (x). Do not use the symbol (x) when spelling out the quantity/dimension. Do not use typesetter’s (curly) quotation marks for inches and feet. If the abbreviation or symbol is closed up to the number, it is repeated after both numbers, as in the first example (see CMS 9.18).

8' × 11' (2.4 × 3.4 m)

8½- by 11-foot (2.6- by 3.4-m) board, *but* 8.5' × 11' board

6' × 9', *but* 2.5 × 5 m

30' × 60' map, or 30- by 60-minute map (scale 1:100,000)

fractions (Gregg p. 120) Use decimal style (vs. English style) as much as possible; that is, avoid other than common fractions (e.g., 0.3 acre [0.12 ha], *not* 3/10ths of an acre). Spell out fractions if amounts are less than one, standing alone, or followed by “of a” or “of an.” Use a hyphen between the words.

In March one-third of the lake is open to anglers. *not* In March 1/3 of the lake is open to anglers.

I have read and edited three-quarters of the article.

The 0.75-mile (0.9-km) hike takes about one hour. *not* The ¾-mile (0.9-km) hike takes about one hour.

measurements in text (H) Measurements of physical quantities in text are given in original units of the study (spelled out) followed by English or metric conversions (abbreviated in parentheses). In general, keep the same number of significant digits as the original number, round as needed, and do not approximate. Use one space between figure and symbol. Periods are not used with abbreviations. The abbreviated symbol is the same (no *s*) whether indicating singular or plural quantities (CMS 15.72–15.75).

12 acres (4.9 ha)

1,500 miles (2,414 km *not* 2,414 kms)

At 20,320 feet (6,194 m), Mount McKinley is North America’s highest mountain.

Because English and metric units are both included in text, take care when recasting sentences.

The 0.9-mile- (1.4-km) long trail leads to Patterson lighthouse. *not* The 0.9-mile-long trail leads to Patterson lighthouse. [See “Hyphen” in the “Punctuation” section.]

Table 1. English-to-metric conversions		
Multiply	By	To Obtain
<i>Length</i>		
inch (in)	25.4	millimeter (mm)
inch (in)	2.54	centimeter (cm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
<i>Area</i>		
square foot (ft ²)	0.0929	square meter (m ²)
square mile (mi ²)	2.59	square kilometer (km ²)
acre (ac)	0.4047	hectare (ha)
<i>Volume</i>		
gallon (gal)	3.785	liter (l)
cubic foot (ft ³)	0.02832	cubic meter (m ³)
acre-foot (ac-ft)	1,233	cubic meter (m ³)
<i>Rate</i>		
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second (m ³ /s)
<i>Weight</i>		
ounce (oz)	28.349	gram (g)
pound (lb)	0.4536	kilogram (kg)
ton, short (U.S.; 2,000 lb)	0.9072	tonne (t) (metric ton)
<i>Temperature</i>		
degrees Fahrenheit (°F)	°F-32/1.8	degrees centigrade (°C)

In order to convert metric to English, divide the metric number by the conversion factor (see table 1).

money (DSC p. 66) Use a combination of symbols and numerals for money because they are easier for the reader to recognize.

\$5 million, *not* five million dollars

\$6.3 billion, *not* \$6,300,000,000

Certain widely used references to money or amounts less than a dollar may be spelled out (see CMS 9.24). Be consistent when expressing amounts of money: If the amounts are spelled out, use “dollar(s)” or “cent(s).” If numerals are used, use “\$” or “¢” (H).

I wouldn’t give two cents for that car.

Riding the tram costs seventy-five cents. *also* Riding the tram costs 75¢.

Year in Review will cost \$5.47 per copy: \$0.97 for paper, \$1.74 for printing, and \$2.76 for the binding.

percentages When used in a scientific context a percentage is presented as a numeral followed by (no space) the percentage symbol (e.g., %). An inclusive range of percentages is indicated by a numeral followed by an en dash and the second number in the range followed by the percentage sign. (See “ranges of numbers” and “symbols” in this section.)

Campgrounds are usually 70–75% full by noon during July and August.

Non-responders comprised 27% of the sample size.

numbers (cont'd) (DSC p. 67) **ranges of numbers** Inclusive number spans (e.g., years, page numbers, and money) need no preposition but should include an en dash (–). If a preposition is used before a span of numbers (e.g., from 1990 to 1992) do not use an en dash (e.g., “from 1990–1992” is incorrect). Avoid using “between 1990 and 1992” because the initial and final years may not be considered as included. Use a hyphen for noninclusive numbers (commonly used in page numbers, for example, p. 15-4).

- (H) Numbers that span the turn of the 21st century look awkward without four digits (e.g., 1998–03). Hence, include all numerals in years for consistency (e.g., 1994–1995, *not* 1994–95) and page numbers (e.g., pp. 235–238, *not* pp. 235–38).

two- to five-car parking

2- to 4-foot (0.6- to 1.2-m) board

two to four cars; 15–17 vehicles; 2–4 feet (0.6–1.2 m) (use en dashes)

pages 35–37; pp. 230–245 (use en dashes); p. B247-6 (use hyphen)

Use an en dash (without spaces before and after) to indicate continuing or inclusive numbers (CMS 6.83).

1968–1972

pp. 57–65

May 1980–April 1991

32–40°F (no space after degree symbol)

However, do not use an en dash after a preposition (DSC p. 67).

The visitor center is closed from 15 October to 1 April. *not* The visitor center is closed from 15 October–1 April.

You may rent canoes between 9 a.m. and 2 p.m. *not* You may rent canoes between 9 a.m.–2 p.m.

- (H) **telephone numbers** Use hyphens within telephone numbers.

123-456-7890, *not* (123) 456-7890

- (HFC p. 20) **TTY** Text telephone; more inclusive than TDD. Number precedes regular voice number.

Call TTY/301-123-4567; 301-123-8910.

If number is the same:

Call TTY/voice 301-412-1212.

- (H & HFC p. 20) **time of day** 8 a.m., 2 p.m. (a colon followed by numerals, i.e., 8:00 a.m., can be used to express exact hours when emphasis is necessary; spell out *noon* and *midnight*).

At 4:30 a.m. a mortar shell from Fort Johnson arched across the sky.

President Lincoln arrived at noon and the meeting began.

She took the midnight train to Georgia.

Free time is from 1:00 p.m. to 2:30 p.m.

symbols In general, spell out the meaning of signs and symbols in sentences. If practicable, if the sign or symbol is used repeatedly throughout the article, spell out at first mention with the symbol/abbreviation in parentheses, followed by the symbol/abbreviation only from second use onward (see CMS table 14.1 [p. 528] for mathematics signs and symbols). Use symbols and numerals for degrees and percentages because they are easier for readers to recognize.

2%–4% (use en dash and symbol after each number)

10°F–50°F (–12°C–10°C) (no spaces between numbers, °, and F or C)

During the summer, expect temperatures in the 80s and 90s (°F) (26°C–32°C).

chemicals As stated in *The Chicago Manual of Style* (8.158), “Names of chemical elements and compounds are lowercased when written out. Symbols, however, are capitalized and set without periods; the number of atoms in a molecule appears as a subscript.”

sulfuric acid: H₂SO₄

ozone: O₃

sodium chloride: NaCl

mass number When writing isotopes or mass numbers, spell out the chemical name followed by a hyphen and mass number in full size with the symbol in parentheses at first mention. Write the mass number as a superscript to the left of the symbol (see CMS 8.159).

carbon-14 (¹⁴C)

uranium-238 (²³⁸U)

(DSC p. 67) **township/range/section** Format as follows:

T25N, R15E, S3

Section 3 is in T25N, R15E

(DSC p. 67) **Universal Transverse Mercator Grid System (UTM)** UTM's are used for mapping historical and archaeological sites and GIS applications. Format as follows: Zone Easting Northing or Z(2 digits)#E (6 digits)m#N(7 digits)m.

Z11 E273940m N4729031m

Note: Most UTM's are calculated in meters; occasionally, however, they are computed in feet. To avoid any confusion, use “m” after the easting and northing coordinates.

Quotations

As stated in *The Chicago Manual of Style* (5.202), “Traditionally a verb, *quote* is often used as an equivalent of quotation in speech and informal writing. Also, writers (especially journalists) tend to think of *quotes* as contemporary remarks usable in their writing and of *quotations* as wisdom of the ages expressed pithily.” Hence, use *quotations* sparingly to illustrate and amplify the text. The use of *quotes*, however, is encouraged, especially in *Natural Resource Year in Review*. Quotations used to introduce a book, report, or chapter are called epigraphs and are encouraged in *Natural Resource Year in Review*. Whether paraphrasing or quoting, authors should give credit to words and ideas taken from others. A parenthetical reference in the text (as a personal communication or as a reference citation) is sufficient acknowledgment. Meticulous accuracy is vital in quoting others.

what not to quote Commonly known facts should not be quoted (i.e., put in quotation marks) unless the wording is taken from another author. Proverbial, biblical, and well-known literary expressions need not be quoted.

To illustrate the following rules, text from *A Sand County Almanac* by Aldo Leopold is used. Note that the five-line quotation (below) appears in block style (see “Integrating or Blocking?” section).

Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest it is capable, under science, of contributing to culture.

capitalization
(CMS) In general, capitalize the first word if the quotation is a complete sentence or introduced with a colon or comma. However, phrases or lists that follow a colon or comma are not capitalized. Also, do not capitalize the first word if the quotation is fragmentary and placed in running text (without a comma or colon) (see CMS 11.16).

In *A Sand County Almanac*, Aldo Leopold suggests, “When we see land as a community to which we belong, we may begin to use it with love and respect.”

In 1966 Aldo Leopold stated, “There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest it is capable, under science, of contributing to culture.”

display or headline type
(H) Set display quotation in italics with no quotation marks. Set author credit in roman type (HFC p. 16). If attribution is set on the line following the quotation, it should be preceded by an em dash.

Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. Aldo Leopold, 1966

Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land.
—Aldo Leopold, 1966

initial capital or lowercase? **block quotation** The initial letter of a block quotation may be lowercased if the syntax demands it.

run-in quotation When a quotation is used as a syntactical part of a sentence, it begins with a lowercase letter, even if the original is a complete sentence beginning with a capital. But when the quotation is not syntactically dependent on the rest of the sentence, the initial letter is capitalized.

Similarly, if a quotation that is only part of a sentence in the original forms a complete sentence when quoted, a lowercase letter may be changed to a capital where the structure of the text suggests it (see CMS 11.16–11.18).

In discussing his land ethic, Aldo Leopold observes that

conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest it is capable, under science, of contributing to culture.

insertions in quotations
(CMS 11.68)

According to *The Chicago Manual of Style*, insertions may be made in quoted material to (1) clarify ambiguity, (2) provide missing words or letters, or (3) give the original foreign word or phrase where an English translation does not convey the exact sense. Any such interpolations are enclosed in brackets (not parentheses). When an interpolated word takes the place of the original word, ellipsis points are omitted.

“Conservation is getting nowhere because it is incompatible with our Abrahamic [the biblical patriarch] concept of land.”

“Conservation is getting nowhere because it is incompatible with our [Old Testament] concept of land.”

“Deer browsing in Manassas [National Battlefield Park] is a serious management concern.”

“Our top priority in controlling invasive nonnative plant species in this national park is spotted knapweed, *C[entaurea] biebersteinii*.”

run in or block?
(CMS 11.12)

According to *The Chicago Manual of Style*, “Whether to run in or set off a quotation is commonly determined by its length.” In general, quoted matter that runs to eight or more typed lines is set off from the text; shorter quotations are run into the text. But in material where the quotations are being compared or otherwise used as entities in themselves (even quotations of one or two lines), setting them all off from the text may be best. In other words, comparable quotations in the text should be typographically comparable. Smaller type or a different typeface, with reduced leading, and indented from the left and right, can help distinguish the passage as a block quotation (see also CMS 11.23 and 11.36).

italics added

When it is desirable to call attention to a certain word or words in a quotation, these may be italicized. The reader should be told when this has been done (e.g., “emphasis added”) either in a note giving the source of the quotation, in parentheses directly following the quotation, or in brackets following the italicized passage in the quotation (see CMS 11.70).

Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a *commodity* belonging to us. When we see land as a *community* to which we belong, we may begin to use it with love and respect. (Aldo Leopold, 1966; italics added)

permissible changes
(CMS 11.8)

Direct quotations must exactly reproduce not only the wording but also the spelling, capitalization, and internal punctuation of the original, except that single quotation marks may be changed to double quotation marks, and double may be changed to single as needed (see “Punctuation” section). In quoting from older works, authors may consider it desirable to modernize spelling and punctuation for the sake of clarity. The reader should be informed of any such changes in a note or in the preface (if this will be common throughout the work). Other permissible changes include the following:

1. The initial letter may be changed to capital or lowercase.
2. Final punctuation marks may be changed and punctuation marks may be eliminated where ellipsis points are used.
3. Obvious typographical errors from a modern book or newspaper may be silently changed (i.e., no “sic”), but in an older passage the error or idiosyncrasy should be preserved.

quotation marks
(CMS 11.33 and 8.138).

Double quotation marks are used to enclose quoted words, phrases, and sentences that are run into the text. Single quotation marks are used to enclose a quotation within a quotation and to signify a cultivated plant variety (see also “quotation marks” in the “Punctuation” section).

The public affairs officers explained, “The superintendent addressed park staff and encouraged us by saying, ‘We look forward to the arrival of a type 1 team tomorrow morning to help us contain the wildfire.’”

Resource managers took cuttings from ‘Jefferson,’ a Dutch elm disease-resistant tree on the National Mall, for propagation as clones.

- sic** The word “sic” (“so,” “thus,” “in this manner”) may be inserted in brackets following a word misspelled or wrongly used in the original material to indicate that the misspelling or misuse was in the original. Note that “sic” is a complete word, not an abbreviation, and therefore takes no period. Overuse is discouraged, and multiple uses of “sic” can be replaced by one general comment in a note (see CMS 11.69).

We haveing [sic] fixed on this situation as the one best Calculated for our Winter quarters I deturmin’d [sic] to go as direct a Course as I could to the Sea Coast which we Could here [sic] roar and appeared to be at no great distance from us. (William H. Clark, 8 December 1805, upon selecting location for winter camp near present-day Astoria, Oregon)

Capitalization

Generally use a “down” or lowercase style, which helps avoid an image of self-importance. The down style is applied to titles for and headings within articles, including the titles and headings of tables. Exceptions are made in cases where it is likely that a phrase will be misunderstood or misread using lowercase style. Proper nouns are still conventionally capitalized, but many words derived from or associated with them may be lowercased with no loss of clarity or significance (e.g., parmesan cheese, brussels sprouts, alpine, and bohemian) (see CMS 8.2, 8.65).

acts, awards, orders, plans, policies, programs, and projects

(H)

Generally lowercase all such names unless they refer to formal organizational bodies, are long-term programs, or are widely known and commonly accepted.

Endangered Species Act, *but* the act

National Park Service Organic Act of 1916; act of 1916

Inventory and Monitoring (I&M) Program; I&M network, Sonoran Desert Network

Director’s Award for Natural Resource Management, *but* director’s award

Social Security

Superfund

Presidential Metal of Freedom; the presidential oath of office

The general management, resource management, and fire management plans are nearly completed.

Adopted uses for certain NPS programs:

Sabbatical in the Parks—capped because it is a formal program

Natural Resource Challenge—capped because it is a formal, funded program

Cooperative Ecosystem Studies Units—capped; could be considered a proper noun

Exotic Plant Management Teams—capped; formal, funded program

but

research learning center—lowercased when used generically and not part of a proper name (e.g., Jamaica Bay Research Learning Center) (follows same rule as for “national park” [H])

agencies and bureaus

(H)

In general, use the formal names of agencies and bureaus, e.g., *National Park Service*, not *Park Service*; *U.S. Geological Survey*, not *Geological Survey*; and *USDA Forest Service*, not *Forest Service*, so as not to confuse state and federal entities. However, for variety within an article and after initial use of the formal name, a short form (capitalized) is acceptable (e.g., *Park Service* or *the Service*; *Fish and Wildlife Service*; *Forest Service*) unless it could be confused with a state entity. Lowercase short titles that could apply to a number of organizations (e.g., service center, regional office, advisory council, state historic preservation office/officer, steering committee, task force). Lowercase all one-word short titles (e.g., department, bureau, and agency) (see CMS 8.66–8.120).

Advisory Council on Historic Preservation; the advisory council; use *ACHP* as modifier

U.S. Army Corps of Engineers; the Corps of Engineers (or *the Corps* if used often)

U.S. Navy; the navy

National Register of Historic Places; the national register

National Park Service; Park Service; the Service; use *NPS* as modifier (not as noun)

United States Army, U.S. Army; the army or the American army; the armed forces; *but* the Fifth Army

United States Coast Guard; U.S. Coast Guard; the Coast Guard

United States Marine Corps; U.S. Marines; the marines

United States Signal Corps; the Signal Corps

U.S. Fish and Wildlife Service; Fish and Wildlife Service; use *USFWS* as modifier

USDA Forest Service; use *USDA-FS* as modifier

U.S. Geological Survey; use *USGS* as modifier

aircraft, artificial satellites, ships, spacecraft, and trains

(DSC p. 23; HFC p. 17)

Names of aircraft, artificial satellites, ships, spacecraft, and trains are capitalized and set in italics. Abbreviations before the name (e.g., *SS* or *HMS*) are set in roman. Do not use periods in the abbreviation preceding a ship's name. When forming the possessive, the *s* is set in roman. Use *it* not *she* in reference to all names of transport (see CMS 8.124–8.126).

HMS Frolic

USS Arizona or *Arizona's* crew

Spirit of Saint Louis's turret

Sputnik motivated the United States to take action.

If the italicized name occurs in text that is already set in italics, such as some quotations and captions, the name is set in roman.

Sputnik motivated the United States to action.

The greatest loss was on board the USS Arizona.

Designations of class or make of cars or aircraft, names of train runs, and space programs are capitalized but not set in italics (see CMS 8.125).

Chrysler Imperial

Project Mercury

Boeing 747

the train they call the City of New Orleans

animal and plant names

(CMS 8.136–8.137)

common names Lowercase except when a proper name is part of the common name. At first mention of the species, include the Latin name in parentheses.

alpine forget-me-not (*Eritrichium* Schrad. ex Gaudin) (*alpine* is lowercased because here it is not referring to the Alps; “ex” signifies formal publication of the botanical description of a species; in this case Gaudin formally published the name originally offered by Schrad.)

American dipper; prothonotary warbler; bald eagle; Canada goose; Ross's goose; snow goose

black bear; grizzly bear; Asiatic black bear

golden-mantled squirrel; Kaibab squirrel

Hereford cattle

ponderosa pine; lodgepole pine; Douglas fir (spelling without hyphen follows *Merriam-Webster's Collegiate Dictionary*, 11th edition)

(CMS) **Latin or scientific names** Latin names of plants and animals (*Genus species*) are set in italic type. Always capitalize genus names, but never capitalize species names even if they are in a capitalized title. Following *The Chicago Manual of Style* (8.134), divisions higher than genus—phylum, class, order, family—are capitalized but not italicized. The generic terms “order,” “family,” and so on are not capitalized. Intermediate groupings are treated similarly. The abbreviations “sp.” and “var.” when used without a following

element, indicate that the species or variety is unknown or unspecified. The plural “spp.” is used to refer to a group of species. These abbreviations are not italicized. After the first use of a genus name, it may be abbreviated by a single letter. A person who named a species can be added, though it is never italicized and is often abbreviated. Plant hybrids are indicated by a multiplication sign, space on each side, between the two species names. Cultivated varieties, or cultivars, are indicated by single quotation marks (see CMS 8.128–8.134).

Chordata (phylum)

Chondrichthyes (class)

Monotremata (order)

Hominidae (family)

Ruminantia (suborder)

Felinae (subfamily)

Viola sp.

Rosa rugosa var.

Rhododendron spp.

In late spring, Atlantic horseshoe crabs (*Limulus polyphemus*) climb ashore in Delaware Bay, where females deposit eggs.

The new species *Gleichenia glauca* provides further details about the history of Gleicheniaceae.

Typha × *glauca* is a hybrid cattail that is a cross between *T. latifolia* and *T. angustifolia*.

‘Jefferson’ is an American elm cultivar that is resistant to Dutch elm disease.

The western prairie fringed orchid (*Platanthera praeclara* Sheviak and Bolwes) is federally listed as a threatened species.

campgrounds, ranger stations, trails, trailheads, and visitor centers

(H)

Park Science and *Year in Review* make an exception to the general use of down or lowercase style with respect to common proper nouns in National Park System units (i.e., campgrounds, ranger stations, trails, trailheads, and visitor centers). Capitalizing these proper nouns facilitates reading. However, when used generically, they are lowercased.

Longs Peak Trail; the trail

Aspenglen Campground; the campground

Wild Basin Ranger Station; the ranger station

Glacier Gorge Trailhead; the trailhead

Alpine Visitor Center; the visitor center

The official names (full and short) of designated trails (e.g., Appalachian National Scenic Trail, Appalachian Trail; Santa Fe National Historic Trail, Santa Fe Trail) are, of course, capitalized. The official names of designated visitor centers are capitalized (e.g., Henry M. Jackson Visitor Center).

compass directions

Lowercase compass directions unless referring to regional terms (see “Regional Terms” below and CMS 8.48–8.49).

the Southwest (U.S.); southwestern climate; the southwest of Ohio

courses, disciplines, lectures, and meetings

(CMS 8.91–8.93)

Official names of courses and lecture series are capitalized. Disciplines are not capitalized. Individual lectures are capitalized and usually enclosed in quotation marks.

I am signing up for Geology 101. *but* I have taken a few geology courses. *or* I am majoring in geology.

The University of Illinois hosted this year's G. Frederick Smith Memorial Lecture. The lecture, "Reactions on Chemically Modified Surfaces" was very popular.

Though he has taken many cooking classes and is quite an accomplished chef, he still prefers peanut butter and jelly sandwiches.

The Wildlife Management Institute announced the 71st Annual North American Wildlife and Natural Resources Conference.

The Fifth National Integrated Pest Management (IPM) Symposium, "Delivering on a Promise," is being held in St. Louis, Missouri.

Earth, other planets, and planetary bodies

Following the example of the American Geological Institute's *Glossary of Geology*, and *Merriam-Webster's Collegiate Dictionary*, capitalize *Earth* and the names of the other planets in the solar system. Avoid putting "the" before *Earth*, as one would not say, "the Mars." Other references to planetary bodies, such as the moon, sun, and solar system, are lowercased.

geographic and topographic names

Official (or widely accepted regionally or locally used) names of mountains, rivers, oceans, islands, and so forth are capitalized, including the generic term, such as *lake*, *mountain*, *river*, or *valley*, that accompanies the name. When a generic term is used descriptively rather than as part of an official name, or when it is used alone, it is lowercased (see CMS 8.58). When official topographic names are grouped and the generic term comes after, the generic term is usually lowercased (see CMS 8.57). When "state" follows the name of the state, "state" is capitalized (8.55). (See "Governmental Entities" section for clarification of *state* and *city*.)

the Pacific Ocean; the Pacific and Atlantic oceans

Lakes Michigan and Erie; Green, Blue, and Black lakes

Bering Strait

the California desert, *but* Mojave Desert

Cape Cod; the cape (even when referring to Cape Cod)

Chesapeake Bay; the bay (even when referring to the Chesapeake Bay)

Colorado Plateau; the plateau (even when referring to the Colorado Plateau)

Great Barrier Reef

Great Rift of the Snake River Plain

the French coast, *but* the West Coast (U.S. region)

the Maryland state fish

Mississippi Delta; the Mississippi River valley delta

Outer Banks of North Carolina

the Florida peninsula, *but* the Upper Peninsula (the northern portion of Michigan)

the San Francisco Bay estuary

The regulations were promulgated by the City of Denver [governmental entity]

Washington State; New York State [to distinguish from the cities of the same name], *but* the state of Washington [a place]

(CMS 8.49) **regional terms** According to *The Chicago Manual of Style*, "Regional terms (often based on points of the compass) that are accepted as proper names but do not normally appear on maps are usually capitalized. Adjectives and nouns derived from such terms, however, are usually lowercased." Specific regions in the United States often are capitalized.

the Midwest; midwestern

the East; eastern; an easterner

Pacific Northwest

Atlantic Coast (a region); the wildlife along the Atlantic coast

West Coast; East Coast (regions)

That particular species inhabits southern California. The Miami blue inhabits South Florida.

western Texas; West Texas (when referring to a region)

southern Appalachians; northern Rockies

the San Francisco Bay area; the Bay Area

geologic terms
(ICS; CMS 8.143–8.145)

The adjectives *early/lower*, *middle*, and *upper/late* in conjunction with formal geologic terms (formations and time periods) are capitalized. When the modifiers are used informally (as descriptions), they are lowercased.

Jurassic Morrison Formation *but* Morrison sandstone

Epochs (lowercase *early/lower*, *middle*, *late/upper* as modifiers): Paleocene, Eocene, Oligocene, Miocene, Pliocene, Pleistocene, and Holocene

Periods (capitalize *Early/Lower*, *Middle*, *Late/Upper* as modifiers): Cambrian, Ordovician, Silurian, Devonian, Pennsylvanian, Mississippian, Permian, Triassic, Jurassic, Cretaceous, Tertiary, and Quaternary.

Archean, Proterozoic (capitalize *Early/Lower*, *Middle*, *Late/Upper* as modifiers)

Precambrian (lowercase *early/lower*, *middle*, *late/upper* as modifiers)

The terms *Eon* (Archean, Proterozoic, and Phanerozoic), *Era* (Paleozoic, Mesozoic, and Cenozoic), *Period* (see above), and *Epoch* (see above) should also be capitalized in conjunction with a formal geologic term.

Note: International geologic terms will include the Carboniferous Period (combines the North American Mississippian and Pennsylvanian periods), and the Paleogene and Neogene periods have replaced Tertiary and Quaternary. (See International Commission on Stratigraphy international stratigraphic chart at <http://www.stratigraphy.org/over.htm> (accessed 30 May 2006)).

governmental entities
(CMS 8.66)

According to *The Chicago Manual of Style*, “The full names of legislative, deliberative, administrative, and judicial bodies, departments, bureaus, and offices, and often their short forms, are capitalized. Adjectives derived from them are usually lowercased, as are the generic names for such bodies when used alone.” When the government rather than the place is meant, *State* and *City* are usually capitalized (see CMS 8.56).

She works for the State of Colorado and lives in the city of Denver.

the United Nations General Assembly; the UN General Assembly; the assembly

the United States Congress; the U.S. Congress; the 97th Congress (following number rule); Congress; congressional

Parliament; parliamentary; an early parliament; the British parliament

the Department of the Interior; Interior (a short form, not a generic term)

the United States Postal Service; U.S. Postal Service; the postal service; the post office

the United States (or U.S.) Supreme Court; the Supreme Court; the Court (traditionally capitalized in reference to the U.S. Supreme Court)

the Bush administration

federal; the federal government; federal agencies

U.S. government

the Acadia Division of Natural Resources (formal name); the Acadia natural resources division (general); the division

Midwest Regional Office; the regional office

highways and roads

(CMS 8.60)

Capitalize the full and short names of federal, state, county, and local roads, as designated in the road atlas or on USGS maps.

Interstate 5; I-5; an interstate highway

U.S. Route 12, U.S. 12

Elbert County Highway 317; Elbert County 317

Also capitalize the popular names—designated or regionally accepted—of these and other roads.

Route 66

Hagerstown Pike

Generals Highway

Trail Ridge Road

Use the regionally accepted name, rather than the standard short title, if it is known.

County Road 42 in the El Malpais region

M-5, etc., for state highway system in Michigan

Roads named for the area they pass through may be capped, depending on popular acceptance. Capitalize the names of local roadways, such as streets and avenues.

Maple Street, *but* Cypress and Larch streets

Other roads are usually lowercased.

local road 2

Forest Service road 27

nationalities, tribes, and other groups of people

(CMS 8.41, 8.103–8.105)

The names of specific ethnic, tribal, religious, and other groupings of people are capitalized. When the names serve as adjectives, they are still capitalized (e.g., Ancient Puebloan culture).

American Indian or Native American

the Amish; Amish communities

Buddhism; Buddhist

Japanese American

Alaska Native

Hispanic

Inuits; Inuit sculpture

Native Hawaiian

Euro-American

Designations based loosely on color are usually lowercased, though capitalization may be appropriate if the author strongly prefers it.

black people; blacks; people of color; African American

white people; whites; Caucasian(s)

political divisions

Words such as *empire*, *state*, *county*, *city*, *kingdom*, *colony*, *territory*, and so forth, which designate political divisions of the world, are capitalized when they are used as an accepted part of the proper name. According to *The Chicago Manual of Style* (8.55), “When preceding the name, such terms are

usually capitalized in names of countries but lowercased in entities below the national level.” Used alone, however, such terms are usually lowercased, except when they refer to governmental entities.

Washington State (to distinguish it from Washington, D.C.); the state of Washington
New England states; Middle Atlantic states
Hennepin County; the county of Hennepin
New York City; the city of New York
Evanston Township; the town of Evanston
Kweneng District; the district
the commonwealth of Massachusetts (not a country); the Commonwealth of Australia (a country); the commonwealth
the Republic of Lithuania; the republic
the Indiana Territory; the territory of Indiana
the Northwest Territories
Oregon Territory; Indian Territory

proper names
(DSC p. 22)

Nouns are capitalized if they are part of a formal name, lowercased if they stand alone. If a term is plural following more than one proper name (including topographic names), it is lowercased (see CMS 8.21, 8.23, 8.25, and 8.57) (also see “Animal and Plant Names” section).

Acadia National Park; the park’s policy
Wisconsin Ice Age; during the ice age
Ranger Baker; Ask a ranger.
Superintendent Levy; The superintendent is here.
Apache Visitor Center; at the visitor center
water from the Shenandoah and Potomac rivers
emigrants on the California and Oregon trails; wagons along the Santa Fe Trail
Southern California Coast Research Learning Center; research learning center

**public places
and structures**
(CMS 8.60–8.62, 8.109)

The terms *avenue*, *boulevard*, *bridge*, *building*, *church*, *fountain*, *hotel*, *park*, *room*, *square*, *street*, and *theater* are capitalized when part of an official or formal name. When the plural form is used, such terms are usually lowercased (see CMS 8.60). Used alone (i.e., generically), such terms are lowercased (see CMS 8.60–8.62 and 8.109).

Adler Planetarium; the planetarium
the Empire State and Chrysler buildings
Tiananmen Square; Tiananmen and Time squares
First Congregational Church; the church
Lincoln Park; the park
the Oval Office; the president’s office
Westminster Abbey
a temple of Venus

Applied to NPS uses, this would mean:

Yellowstone National Park; the national park; the park
Curecanti National Recreation Area; the national recreation area
Yosemite and Redwood national parks; the parks

titles and offices Civil, military, religious, and professional titles and titles of nobility are
(CMS) capitalized when they immediately precede, and are serving as part of, a personal name (see CMS 8.25).

President Kennedy

General Eisenhower

Professor Haden

Ranger Selleck

When such titles are used in apposition (noun equivalents), often set off by commas, they are not part of the name and thus are lowercased (see CMS 8.25).

Yesterday the superintendent, Cathleen Smith, announced that she would retire at the end of fiscal year 2007. *but* Yesterday, Superintendent Smith announced her retirement date.

(DSC p. 3) **With full names, titles may be abbreviated.**

Gen. Robert E. Lee

Sen. Ted Kennedy

In text matter, titles following a personal name or used alone in place of a name are lowercased (see CMS 8.25–8.29).

the president of the United States; the president; President George Bush; President Bush; George Bush, president of the United States; the presidency; presidential; the Bush administration

the secretary of the Interior; the secretary; Secretary of the Interior Dirk Kempthorne; Secretary Kempthorne; Dirk Kempthorne, secretary of the Interior

the director of the National Park Service; the director; Director Fran Mainella; Director Mainella; Fran Mainella, director of the National Park Service

the associate director for Natural Resource Stewardship and Science; the associate director; Associate Director Michael Soukup; Associate Director Soukup; Michael Soukup, associate director of Natural Resource Stewardship and Science

the secretary of State; the secretary; Secretary of State Condoleezza Rice; Secretary of State Rice; Condoleezza Rice, secretary of State

the senator; the senator from Ohio; Senator Howard M. Metzenbaum; Senator Metzenbaum; Howard M. Metzenbaum, senator from Ohio

the state senator; the senator; Olga Parker, Ohio state senator; State Senator Parker

the congressman from Oregon; the congresswoman from Ohio; the representative from New Mexico; Congressman Olin Paprowski; Congresswoman Deborah Baron; Congresswoman Baron; Representative DeGette of Colorado; Diana DeGette, representative from Colorado; Olin Paprowski, congressman from Idaho

the general; commander in chief; General Ulysses S. Grant, commander in chief of the Union army; General Grant

the pope; the papacy; Pope John XXIII

the president; the president's office; President Serafina; Olga Serafina, president of Causwell University; Alfred Beamish, president of Hostwell Corporation; Mr. Beamish, president of the corporation

the state historic preservation officer; State Historic Preservation Officer Jones

the state historic preservation office (if that is the title of this office in a particular state, then capitalize; often this is not the case)

(H) **bylines** When position titles are included in bylines in *Natural Resource Year in Review*, they are capitalized. In the section “About the Author” in *Park Science*, titles are typically included in full sentences and are, therefore, not capitalized.

Scott F. Girdner, Aquatic Biologist, Crater Lake National Park, Oregon (byline)

Scott F. Girdner is an aquatic biologist at Crater Lake National Park (Oregon). He can be reached at 541-594-3078 or scott_girdner@nps.gov. (sentence)

**titles of published works
(in text)**
(CMS)

In the body of an article, capitalize and italicize the titles of published books; periodicals; movie, television, and radio programs; plays; works of art; and regularly appearing cartoons. Lowercase article (*a, an, the*), prepositions of two to four letters, and conjunctions (*and, but, for, nor, or*). Always capitalize the first and last words of a title (see CMS 8.178, 8.193, 8.196, 8.206, and 8.207).

Draft Environmental Impact Statement, Fire Island National Seashore

Final General Management Plan, Great Smoky Mountains National Park

The Chicago Manual of Style, 15th edition

Merriam-Webster's Collegiate Dictionary, Eleventh Edition (as presented on the title page)

In sentences, lowercase general references to published works and the title of a plan that has not been completed.

the (this) plan

the (this) management plan

this environmental impact statement; this impact statement

The resource management, fire management, and general management plans will be completed next month.

In sentences, capitalize and enclose in quotation marks the following published works: poems; photographs; articles in a periodical; and the chapters, sections, and parts of a book. Follow this rule even when the original heading is set in "sentence style" (e.g., in *Park Science* and *Natural Resource Year in Review*). If quotation marks appear in the original title, internal single quotation marks must be used (see CMS 8.187 and 8.191).

the "Affected Environment" chapter of this document

the "Natural Resources" section of "Affected Environment"

the "Geologic Resources" subsection of "Natural Resources"

Resource managers may be interested in "A critical review of wildlife management practices documented in 'The bison of Yellowstone National Park.'"

Unpublished but completed works (e.g., theses and internal park reports) are capitalized and enclosed by quotation marks (see CMS 8.195).

"Task Directive for the General Management Plan, Cape Lookout National Seashore"

"Collection Preservation Guide, Mount Rainier National Park"

Internet and CD-ROM titles follow the same guidelines as other published works. That is, treat the titles of CD-ROMs as books, and the various sections of a CD-ROM as chapters (CMS 8.197–8.199).

She wrote the text for the "Caves and Karst" section of *Views of the National Parks: Virtual Experiences and Knowledge Centers*.

Use lowercase, standard type, no quotation marks, for passing references and cross-references to book parts (foreword, preface, introduction, contents, appendix, glossary, bibliography, index) (see CMS 8.189–8.190).

alternative B; the "Alternative B: Preferred Alternative"

appendix A; "Appendix A: Legislation"

article 37

chapter 2; "Chapter 2: The Fall of Rome"

figure 3

illustration 5

number 13
page 35
section I.B.2.a.; “Natural Resources” section
table 22
volume 6

- (CMS 8.170) **titles with hyphenated compounds** *The Chicago Manual of Style* suggests: (1) always capitalize the first element; (2) capitalize any subsequent elements unless they are articles, prepositions, coordinating conjunctions (*and*, *but*, *for*, *or*, *nor*), or such modifiers as *flat* or *sharp* following musical key symbols; (3) if the first element is merely a prefix or combining form that could not stand by itself as a word (*anti*, *pre*, etc.), do not capitalize the second element unless it is a proper noun or proper adjective; (4) do not capitalize the second element in a hyphenated spelled-out number (e.g., *twenty-one*); (5) break a rule when it doesn’t work (see the last three examples below).

Anti-immigration Marches of the 1930s

Results of Anti-Darwinian Resource Management

Disease-Resistant American Elm Returns to the National Mall

First-Time Restoration Prompts Return of Seagrass to Biscayne National Park

Symphony No. 4 in B-flat Major, Op. 60

My First Thirty-ninth Birthday

but

Twenty-First-Century History (“first,” if lowercased, would look inconsistent here)

Hand-me-downs and Forget-me-nots (lowercased short and unstressed elements)

Run-ins and Drop-offs (lowercased short and unstressed elements)

- trademarks** Trademarks are usually indicated in the dictionary and are capitalized. Where possible, use the generic equivalent, as using the registered name may imply favoritism (see CMS 8.162). Indication of trademark (™) or registered trademark (®) is not necessary but could be shown if it would help avoid a misunderstanding.

Clivus Multrum toilet (trademark); composting toilet (generic equivalent)

Jeep (trademark); jeep [lowercase “j”] refers to a military vehicle; four-wheel-drive vehicle, off-road vehicle (generic equivalent)

Plexiglass (trademark); acrylic plastic sheets (generic equivalent)

Rollerblading (trademark); in-line skating (generic equivalent)

Xerox (trademark); photocopy (generic equivalent); photocopier

Velcro (trademark)

Glyphosate (commercially known as Roundup and Rodeo) is a broad-spectrum herbicide that kills plants by inhibiting the synthesis of essential amino acids.

or

Roundup® and Rodeo™ are broad-spectrum herbicides that kill plants by inhibiting the synthesis of essential amino acids.

Punctuation

The general house style for punctuation is an open style: punctuate only when necessary to prevent misreading.

apostrophe (CMS and Gregg)

If a singular noun, add 's (apostrophe and s) to form possessive no matter what the final consonant is (see CMS 7.17).

the cat's tail
Harris's chickens
the hostess's seat
Richard Sellars's book
Superintendent Vazquez's speech

If a plural noun ends in s, add only an apostrophe (see CMS 7.17–7.18).

The visitors' entrance is on the left.
Cannon fire set the officers' quarters ablaze.

Add 's (apostrophe and s) to plural nouns not ending in s (see CMS 7.17).

women's rights
alumni's feelings

Avoid having inanimate objects possessing things (see Gregg, ¶645).

Upper Peninsula of Michigan, *not* Michigan's Upper Peninsula
the benefits of the plan, *not* the plan's benefits
the kiosk at the entrance station, *not* the entrance station's kiosk
the enabling legislation of Yosemite National Park, *not* Yosemite National Park's enabling legislation

(Gregg ¶646) According to *The Gregg Reference Manual*, the possessive form of many common expressions of time and measurement or phrases implying personification is acceptable (see also CMS 7.26).

an hour's delay
two cents' worth
New Year's resolution
Earth's atmosphere, Earth's surface, Earth's crust
rocket's red glare
at arm's length
for goodness' sake

Avoid attaching a possessive form to another possessive. Change the wording if possible.

I have not yet seen the petition of the utility company's lawyer. *not* I have not yet seen the utility company's lawyer's petition.

(CMS 7.29) According to *The Chicago Manual of Style*, "The possessive form may be preceded by *of* where *one of several* is implied."

a sister of Kim's
a favorite book of Director Smith's

brackets Brackets are used mainly to enclose material—usually added by someone other than the original author—that clarifies the surrounding text (see CMS 6.104–6.105).

In the transcript he states, “The NPS [National Park Service] has been my life’s work.”

The order of brackets and related symbols is as follows: ([{}]) (see CMS 6.106).

In contrast, when tsunamis reach shallow water, they slow down considerably and may reach great heights (up to 33 ft [10 m]).

colon As stated in *The Chicago Manual of Style* (6.63), “A colon introduces an element or a series of elements illustrating or amplifying what has preceded the colon.” Colons are followed by one space.

Hurricanes impacted national parks in at least three ways: infrastructure damage, sediment deposition and erosion, and saltwater intrusion.

Additionally, a colon may function as a semicolon but more strongly emphasizes a sequence.

The members of the incident management team gave tirelessly of their time: their efforts reestablished park operations under trying circumstances.

The colon may be used instead of a period to introduce a series of related sentences.

Poirot would solve the mystery by answering three seemingly simple questions: What was in the medicine cabinet? What color were Mr. Sullivan’s pants? When did Mr. and Mrs. Davenheim stop sleeping in the same room?

In the preceding example, the first word following the colon is capitalized (see CMS 6.64). The first word following a colon is also capitalized when it is a proper name.

Species of interest for this study include the following: Douglas fir, ponderosa pine, and Engelmann spruce. *but* Species of interest for this study include the following: ponderosa pine, Douglas fir, and Engelmann spruce.

In URLs, no space precedes or follows a colon.

You can find an archived version of past *Park Science* articles at <http://www.nature.nps.gov/ParkScience>.

comma In a simple series of three or more elements, separate the elements with a comma so the sentence will not be misunderstood. The lack of a comma can lead to ambiguity. Omit after short introductory phrases if meaning is clear (HFC p. 5).

Random House, Peter and Sons, Amanti, and Knopf are publishers.

The alternatives include actions to improve visitor use, manage natural resources more effectively, and streamline park operations.

The final comma is left off only if the last item is a pair (see CMS 6.19).

We ate soup, salad, and macaroni and cheese.

bylines Author names as part of a byline are separated by commas following the rules for items in a series.

(*Ecology*) **citations** A comma separates more than one author-year combination in a citation.

(Krueger et al. 2000, Selleck 2001, KellerLynn 2004)

conjunctions Though the general style is open with regard to punctuation, use a comma before a conjunction (e.g., and, but, or, nor) that joins two independent clauses unless the clauses are very short or closely connected (see CMS 6.32).

John lost the keys to the car, and his family is helping him search every cranny.
He yelled and she stopped.

introductory phrases Unless needed for clarity, omit comma after very short introductory phrases (see CMS 6.25).

In 1976 we celebrated our nation's 200th birthday.

In 2002, USGS scientists mapped the bathymetry of Yellowstone Lake. (year 2002, not number of scientists)

In this valley, glaciers sculpted a U-shaped swath into the bedrock. (because "valley glacier" is a term in itself)

Jr. *The Chicago Manual of Style* (6.49) does not require a comma before *Jr.* or *Sr.* However, if it is used, then a comma should both precede and follow the word. In reference lists, place a comma before *Jr.* and roman numerals as part of a name following adopted style of the journal *Ecology*.

Harrison Ford Jr. (no comma) or Harrison Ford, Jr., is starring in his 50th lead role.

but Martin Luther King, Jr., National Historic Site (legislated name)

Bailey, V. L., A. D. Peacock, J. L. Smith, and H. Bolton, Jr. 2002. Relationships between soil microbial biomass determined by chloroform fumigation–extraction, substrate induced respiration, and phospholipid fatty acid analysis. *Soil Biology and Biochemistry* 34:1385–1389.

Cardon, Z. G., B. A. Hungate, C. A. Cambardella, F. S. Chapin, III, C. B. Field, E. A. Holland, and H. A. Mooney. 2001. Contrasting effects of elevated CO₂ on old and new soil carbon pools. *Soil Biology and Biochemistry* 33:365–373.

dash **em dash (—)** Longer than en dash (–) or hyphen (-), the em dash (—) is used to indicate a sudden change in thought, to add emphasis, or to include an explanatory phrase. Avoid overuse of presenting subordinate information between pairs of em dashes in sentences. Alternatives include offsetting subordinate information with commas, placing it within parentheses, or adding a sentence (see CMS 6.88 and 6.90).

Kings Mountain—named for an early settler and not for King George III—is a rocky spur of the Blue Ridge.

Though the disease has spread eastward, no forests in eastern national parks have been affected—yet.

(DSC p. 70) **en dash (–)** Half the length of an em dash and longer than a hyphen, the en dash is used in compound constructions where one element is two words (see CMS 6.85). An en dash is also used in ranges of numbers and dates (see “Numbers and Symbols” section.)

post–Civil War period

San Francisco–Los Angeles flight, but 4–H club (hyphen)

WAMU-FM KOMO-TV (hyphen)

USDA-FS

ellipsis points (CMS) Ellipses—three dots—indicate an omission (i.e., one word or more) from a quotation. If an entire sentence within a quotation is omitted, or if what remains is grammatically complete, use four ellipsis points. According to *The Chicago Manual of Style* (11.57), “When three [dots] are used, space occurs

both before the first dot and after the final dot. When four are used, the first dot is a true period—that is, there is no space between it and the preceding word.” Do not use ellipsis points at the beginning or end of a quotation unless left grammatically incomplete on purpose (see CMS 11.54 and 11.57).

Where necessary for fidelity to the original and ease of reading, ellipses may be preceded or followed by a comma, colon, semicolon, question mark, or exclamation point. Placement of the other punctuation depends upon where the omission occurs (see CMS 11.58).

- (CMS 11.53) Take care to not misrepresent the original material with the placement of ellipses. As *The Chicago Manual of Style* points out, “Part of one sentence or paragraph may be syntactically joined to part of another yet result in a statement alien to the material quoted.” The sense and meaning of original text must be preserved in the quotation.

To serve as an example, consider a complete passage from the NPS Organic Act:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created in the Department of the Interior a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary and who shall receive a salary of \$4,500 per annum. There shall also be appointed by the Secretary the following assistants and other employees at the salaries designated: One assistant director, at \$2,500 per annum, one chief clerk, at \$2,000 per annum; one draftsman, at \$1,800 per annum; one messenger, at \$600 per annum; and, in addition thereto, such other employees as the Secretary of the Interior shall deem necessary: Provided, That not more than \$8,100 annually shall be expended for salaries of experts, assistants, and employees within the District of Columbia not herein specifically enumerated unless previously authorized by law. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purposes of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

The passage may be shortened as follows:

There is hereby created ... a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary.... The service ... shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purposes of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

- hyphen** Generally use a hyphen between two or more words combined to form a modifier preceding the word modified, except when the first word is an adverb ending in *ly* (see CMS 5.92). Notice that placement of a hyphen can radically change the meaning and should be used judiciously. The hyphen should serve to clarify meaning and can be omitted if unnecessary.

small-state senators vs. small state senators

Fifty five-year-old cars were in the lot. vs. Fifty-five-year-old cars were in the lot.

rust-resistant alloy

a dog-eat-dog world in the city

an off-the-record comment

The long-awaited bridge replaced a series of ferry crossings.

The backed-up water behind Hoover Dam forms a 110-mile- (177-km) long lake. [no second hyphen after conversion]

but a federally funded project

When two or more hyphenated compounds have a common basic element, the hyphens are all retained (the first hyphen is called a “suspension hyphen” because its use is suspended) (see CMS 7.89).

4- to 5-acre (1.6- to 10-ha) lots

8-, 10-, and 16-story buildings

moss- and ivy-covered walls, *not* moss and ivy-covered walls

Cape Cod National Seashore has a 40-mile- (64-km) long stretch of pristine sandy beach. [no second hyphen after conversion]

parentheses

(H; CMS)

In *Park Science and Natural Resource Year in Review*, parentheses are commonly used to set off species names, acronyms (used as modifiers later in the article), and measurement conversions. They may also set off explanatory or digressive elements. In the case of species names, parentheses that enclose italicized species names and trailing punctuation should be set in the font style of the main material (CMS 6.3 and 6.6).

In Lake Mead you can catch largemouth bass at 5- to 20-foot (1.5- to 6.1-m) depths.

Because sub-lacustrine hydrothermal fluids may emit potentially toxic elements, researchers from Northern Arizona University (NAU) investigated possible transmission of trace metals from vent fluids up through the food chain to native Yellowstone cutthroat trout (*Onchorhynchus clarki bouvieri*) and animals that feed on them.

- (H) **directions to readers and reference citations** Set off in parentheses, generally at the end of a sentence to avoid disruption of a passage. No punctuation separates the author and year of publication. (See “Citations and Documentation” section.)

The coat of the American black bear can be black, brown, or auburn (left).

The core of L’Enfant’s 1791 plan is the triangle created by the Capitol, the White House, and the Mall (see map above).

In 1991 the National Park Service compiled data on 721 incidents of fossil threat to paleontological resources (Santucci 1991).

- (H) **Both the words “figure(s)” and “table(s)” are spelled out in a sentence, but “fig.” or “figs.” are used in parenthetical notations.**

Valley Creek is an outstanding trout stream in Pennsylvania (figs. 1 and 2).

The number of species of special concern from federal, state, and national lists (table 1) at the parks varied from 10 at Johnstown Flood National Memorial to 23 at Gettysburg National Military Park.

full sentences When a full sentence is contained inside parentheses, the terminal period also goes inside (see CMS 6.103).

period

(Gregg ¶101)

End full sentences with a period. Imperative sentences, which imply a subject, also end in a period. Condensed expressions, which represent a complete sentence, are also followed by a period. Sentence fragments should be recast to create a complete sentence. A period is followed by a single space.

Go over there.

October has 31 days.

quotation marks

According to *The Gregg Reference Manual* (p. 59), “Quotation marks have three main functions: to indicate the use of someone else’s words, to set off works and phrases for special emphasis, and to display the titles of certain literary and artistic works.”

According to Newell et al. (1953), “Extensive and excellent exposures of marine Permian rocks of many contrasting rock and fossil phases are spread over much of western Texas and southern New Mexico (fig. 2).”

The words “figure” and “table” are spelled out in sentences but abbreviated in parenthetical notations.

the “quotation marks” part of this document

(CMS 11.33) **single and double quotation marks** According to *The Chicago Manual of Style*, “Quoted words, phrases, and sentences run into the text are enclosed in double quotation marks. Single quotation marks enclose quotations within quotations; double marks, quotations within these; and so on.”

with comma or period A period or comma is placed inside the closing quotation mark (see CMS 6.8).

The interrogator said, “State your name and serial number,” but I did not have a serial number.

with question mark or exclamation point The placement of a question mark or exclamation point depends upon the meaning of what is being quoted. If the quotation itself includes a question mark or an exclamation point, then the punctuation mark goes inside the closing quotation mark. However, if the entire sentence (including the quoted material) is a question or exclamation, then the punctuation is placed after the quotation mark (see CMS 6.9).

Why did Alfred call it a “foregone conclusion”? but Gayle asked, “What shall we do?”

Bill shouted, “The house is on fire!”

with semicolon or colon A colon or semicolon is placed outside the closing quotation mark (see CMS 6.9).

The interrogator said, “State your name and serial number”; I did not have a serial number.

quotation marks—for special emphasis **irony** Words used to convey irony should be enclosed in quotation marks only when the irony might otherwise be lost (see CMS 7.58).

Our 77-year-old “baby” is a white German shepherd named “Sophy.”

Greenland is a “white” island.

A favorite dish of my “vegetarian” wife is skate with mustard sauce.

nonstandard use of words An accepted term used in a nonstandard way may be placed in quotation marks. Often it is better to apply a standard technical term in a nonstandard way than to invent a new term. In such a case, place the term in quotation marks.

The use of the term “glacier” is suspect when applied to that boulder field.

slang Words classed as slang may be placed in quotation marks if they are unfamiliar to the normal vocabulary of the writer or may be unfamiliar to the reader (see CMS 7.61).

The “seasonal” made quite an impression on permanent staff.

semicolon Use a semicolon between two parts of a compound sentence. The words *thus*, *indeed*, *hence*, *accordingly*, *besides*, *therefore*, *then*, and *however* should be preceded by a semicolon if they are used as a transition in a compound sentence (see CMS 6.58). Also use a semicolon to separate items in a series that has internal punctuation (see CMS 6.21) or for especially long or complex series.

slash or solidus

(H; DSC p. 71)

In general, avoid using slashes. When a hyphen or en dash would be confusing, however, use a slash to show a connection or relation between two things, alternative choices, or certain compounds.

human/bear encounters, *not* human-bear encounters (could be construed as a compound element [a human that is also a bear])

aspen/fir forest, *not* aspen-fir (could be construed as a hybrid species)

and/or—avoid using whenever possible (choose one or the other)

When a slash separates one or more compound terms, a space before and after the slash may help avoid confusion (see CMS 6.112).

World War I / First World War

General Management Plan / Environmental Assessment

visitor protection / resource protection

spacing after punctuation

(DSC p. v; CMS 2.12)

Use one space after periods at the ends of sentences and after colons.

Lists

general guidelines Lists in *Park Science* and *Natural Resource Year in Review* follow guidelines set in *The Chicago Manual of Style* (6.124–6.130), which recommends two types of lists: (1) those run into the text and (2) those set vertically. Short, simple lists are usually better run in, especially if the introductory material and the items in the list form a complete sentence. If an author wishes to emphasize a list or if the list is particularly long or complicated (see CMS 6.130), a vertical list is probably preferred. In this age of full-featured, electronic presentations, lists are often overused, lack verbs, and fail to convey precise meaning. Lists should be well thought out and serve a particular purpose. In many cases, lists should be abandoned and recast as sentences (H).

(CMS 6.125) **consistency** *The Chicago Manual of Style* emphasizes the importance of consistency: “Where similar lists are fairly close together, consistency is essential. All items in a list should be syntactically alike—that is, all should be noun forms, phrases, full sentences, or whatever the context requires.”

(CMS 6.126) **introductory material** If a list is introduced by a complete sentence, a colon precedes the list. If the introductory material ends with a verb or preposition, a colon does not precede the list. Commonly, introductory material will include the words “as follows” or “the following,” in which case a colon should precede the list.

Before approval of surface-disturbing actions, the administering agency will [verb, no colon]

ensure that any proposed decision is consistent with the policies set forth above
advise the management group of the proposed actions
allow 10 working days for written comment

The Park Service will preserve and protect natural and cultural resources by [preposition, no colon]

monitoring and mitigating external threats to resource integrity
monitoring the effects of visitor activities and backcountry use

run-in lists As stated in *The Chicago Manual of Style*, “Numerals or letters that mark divisions in a run-in list are enclosed in parentheses. If letters are used, they are sometimes italicized. . . . If the introductory material is an independent clause, a colon should precede the first parenthesis. The items are separated by commas unless any of the items require internal commas, in which case all the items should be separated by semicolons.”

(CMS 6.126)

Her qualifications for the job are as follows: excellent oral and written communication skills, the ability to work alone and with others, and an advanced degree in science (geology).

For our three-day trek in Switzerland we packed (1) raingear and warm, protective outer clothing; (2) three pairs of underwear and socks; (3) sturdy boots for the trail and sandals for the hut/B&B; (4) one pair of pants and shorts; and (5) two short-sleeve and one long-sleeve shirt.

omit numerals, letters, and bullets Omit numerals, letters, or bullets in forming a vertical list unless they serve a purpose, for example to show the order in which tasks should be done, to suggest chronology or relative importance among the items, or (in a run-in list) to clearly separate the items (see CMS 6.125). If items in a vertical list are numbered (but not part of a sentence being completed in the list), each item begins with a capital letter.

Consider the three objectives of scoping meetings:

1. To evaluate the adequacy of existing (published) geologic maps
2. To discuss park-specific resource management issues related to geology
3. To complete a site visit with local experts

vertical lists **punctuation** Individual items in a vertical list carry no punctuation and begin with lowercase letters unless they consist of complete sentences (including imperative sentences) (see CMS 6.127).

The following partial list of topics suggests the range of interpretive themes to be presented:

- regional cultural systems
- prehistoric roads and water systems
- Chacoan outliers

The items in the following list consist of complete (imperative) sentences.

Based on field and laboratory data and field observations, we made several recommendations to improve public safety around the Grand View Mine:

1. Reroute a relatively short segment of the Grand View Trail to avoid crossing the main waste rock pile where the highest uranium concentrations were detected.
2. Update and distribute information to backpackers and hikers.
3. Post warning signs at the trailhead and along the portion of the Grand View Trail that must cross waste rock.

If items in a list run over a line, subsequent lines are indented the same amount.

When Congress enacted title V of Public Law 96-550, the mandates it placed on planning and management were based on the following premises:

- Public knowledge of and interest in the Chacoan system have increased greatly in recent years.
- The San Juan Basin is currently undergoing changes related to a variety of energy exploration and development activities.

If items in a list are written as a sentence beginning with an introduction, then each item begins with a lowercase letter and is followed by a comma or semicolon; a period follows the final item. Because such items are often better run into the text, they should be set vertically only if particular emphasis is required. The items in the following list complete a sentence begun in the introductory material.

Certainly health risks will increase with [preposition, no colon]

1. increased temporal contact with the mine waste rock;
2. prolonged contact with dust particles entrained in the air entrapped in mines (stirred up from walking and other disturbance activities);
3. increased activity and physical exertion in and around the mine waste rock;
4. increased wind activity and subsequent contact with fine particulate matter stirred up by the wind.

Tables

Tables in *Park Science* and *Natural Resource Year in Review* follow guidelines set in *The Chicago Manual of Style* (13.10–13.53). Tables (and figures) are called out in the text by way of lowercased words in parentheses (as “table 1” or fig. 5”). Subsequent mentions not near the table may be indicated as “(see table 1)” or “(see fig. 5)” where readers may need to search for a table or figure.

- general guidelines**
1. Place horizontal rules at the top and bottom of the table, but between categories (columns and rows) only as needed. The table should not resemble a grid.
 2. Font size in the table (including notes) is generally at least one size smaller than the body text, with the exact size depending on the amount of information in the table. The title is the same font size as the body text.
 3. Percent is not a noun, so use “percentage” or “proportion” in the title (or avoid it), but use “%” in column headings. Do not list “%” after data if it is already listed in the column heading.
 4. Line up numbers in columns at equivalent decimal places.
- title**
1. Each table should be numbered (arabic). Table number (e.g., Table 1) should be distinguished typographically from the rest of the title with varying typeface, weight (e.g., boldface), or both, or a separating period. Font size of the title is the same as text.
 2. Do not put a line space between title and body of table.
 3. Titles should identify the table as briefly as possible. They should not furnish background information, repeat the column heads, or describe the results illustrated in the table.
 4. Align titles to the left. Do not include ending punctuation. Use sentence-style capitalization.
 5. Any notes applying to the title should appear as a general note below the table, following source information, if any, and often with the label *Note*: (in italics followed by a colon).
- column headings**
1. Offset with line space (above and below) and horizontal rules (boldface is also acceptable). Align at bottom.
 2. Use sentence-style capitalization.
 3. Do not include ending periods.
 4. Align first column heading to the left; other column headings may be centered, especially when they appear over numbers.
- row headings**
1. Use sentence-style capitalization.
 2. Do not include ending periods.

3. Align left; subcategories may be indented slightly (e.g., em space).
4. When the word “total” appears at the foot of a row, it is often indented more deeply than the greatest indentation or is otherwise distinguished typographically (see CMS 13.29).

notes

1. Place notes below the table.
2. Notes end with a period, even if the note is not a complete sentence.
3. Notes regarding references should be listed as *Source:* or *Sources:* (in italic type followed by a colon); the note itself is not italicized. Include only authors and publication years of references, but ensure that the full reference appears in the reference section at the end of the article.
4. Typically use superscript letters (beginning with “a” for each table) for notes (see CMS 13.47).
5. An asterisk is used as a note for probability level. A single asterisk is used for the lowest level of probability, two for the next higher, and so on.
6. For a table that includes mathematical or chemical equations, where superscript letters or numerals might be mistaken for exponents, *The Chicago Manual of Style* (13.50) suggests a series of arbitrary symbols: * (asterisk; but do not use if probability values occur in the table), † (dagger), ‡ (double dagger), § (section symbol), || (parallels), # (number sign or pound).

Table 3. Rare wetland plant and animal species at Point Reyes National Seashore and the North District of Golden Gate National Recreation Area

Common name	Scientific name	Status	Presence
Invertebrate			
Myrtle's silverspot	<i>Speyeria zerene myrtleae</i>	E	Permanent
California freshwater shrimp	<i>Syncaris pacifica</i>	E	Permanent
Fish			
Tidewater goby	<i>Eucyclogobius newberryi</i>	E	Permanent
Coho salmon	<i>Oncorhynchus kisutch</i>	T	Seasonal
Central California steelhead	<i>Oncorhynchus mykiss</i>	T	Seasonal
Amphibian/reptile			
California red-legged frog	<i>Rana aurora draytonii</i>	T	Permanent
Bird			
California clapper rail	<i>Rallus longirostris obsoletus</i>		Seasonal
Brown pelican	<i>Pelecanus occidentalis californicus</i>	T	Seasonal
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	Permanent
Mammal			
Point Reyes jumping mouse	<i>Zapus trinotatus orarius</i>	State SOC	Permanent
Salt marsh harvest mouse	<i>Reithrodontomys raviventris</i>	T	Permanent
Pacific harbor seal	<i>Phoca vitulina richardii</i>	MMPA	Permanent
Plant			
Sonoma Alopecurus	<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	E	Permanent
Sonoma spineflower	<i>Chorizanthe valida</i>	E	Permanent
Robust spineflower	<i>Chorizanthe robusta</i>	E	Permanent
Marsh milkvetch	<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	State-1B	Permanent
Swamp hairbell	<i>Campanula californica</i>	State-1B	Permanent
Point Reyes bird beak	<i>Cordylanthus maritimus</i> subsp. <i>palustris</i>	State-1B	Permanent
San Francisco gum plant	<i>Grindelia hirsutula</i> var. <i>maritima</i>	State-1B	Permanent
Gairdner's yampah	<i>Perideridia gairdneri</i> subsp. <i>gairdneri</i>	State-4	Permanent
Marin knotweed	<i>Polygonum marinense</i>	State-3	Permanent
Point Reyes checkerbloom	<i>Sidalcea calycosa</i> subsp. <i>Rhizomata</i>	State-1B	Permanent

Note: E = federally listed as endangered; T = federally listed as threatened; State SOC = species of concern; MMPA = Marine Mammal Protection Act; State-1B = rare, threatened, or endangered in California and elsewhere; State-3 = more information about this plant is needed (Review List); State-4 = limited distribution (Watch List).

Table 4. Plant communities with high and moderate potential to occur in wetlands

Map code	Alliance or association	Typical plant species in alliance or association	Wetland indicator status of dominants
7060	Willow super alliance**	<i>Salix ludica</i> , <i>S. lasiolepis</i> , <i>S. leavigata</i>	OBL-FACW
7070	Red alder**	<i>Alnus rubra</i>	FACW
7071	Red alder/salmonberry/red elderberry**	<i>Rubus spectabilis</i> , <i>Sambucus racemosa</i>	FACW-FAC
7072	Red alder/arroyo willow**	<i>Alnus rubra</i> , <i>S. lasiolepis</i>	FACW
24063	Coyotebrush/sedge/rush**	<i>Baccharis pilularis</i> , <i>Carex</i> sp., <i>Juncus</i> sp.	FACW-UPL
32080	Arroyo willow**	<i>Salix lasiolepis</i>	FACW
46022	Pacific reedgrass/sedge/rush**	<i>Calamagrostis nutkaensis</i> , <i>Carex</i> sp., <i>Juncus</i> sp.	OBL-FACW
51010	Saltgrass**	<i>Distichlis spicata</i>	FACW
52030	Rush/sedge/bulrush**	<i>Juncus</i> sp., <i>Carex</i> sp., <i>Scirpus</i> sp.	OBL-FAC
55020	Bulrush/cattail**	<i>Scirpus</i> sp., <i>Typha</i> sp.	OBL-FACW
56010	Cordgrass**	<i>Spartina foliosa</i>	OBL-FACW
64030	Pickleweed**	<i>Salicornia virginica</i>	OBL
64032	Pickleweed/saltgrass/Jaumea**	<i>Salicornia virginica</i> , <i>Distichlis spicata</i> , <i>Jaumea carnosa</i>	OBL-FACW
64031	Pickleweed/arrowgrass**	<i>Salicornia virginica</i> , <i>Triglochin</i> sp.	OBL
1012	California bay/sword fern*	<i>Umbellularia californica</i> , <i>Polystichum munitum</i>	FAC-FACU
20010	California wax myrtle*	<i>Myrica californica</i>	FAC+
30050	Salmonberry*	<i>Rubus spectabilis</i>	FAC+
47030	Introduced perennial grassland*	<i>Holcus lanatus</i> , <i>Lolium perenne</i> , <i>Festuca arundinacea</i>	FAC-UPL
52040	Tufted hairgrass*	<i>Deschampsia caespitosa</i>	FACW

Note: Wetland indicator status follows Reed (1996).

* indicates moderate potential.

** indicates high potential.

OBL = obligate, always found in wetlands (>99% of the time).

FACW = facultative wetland, usually found in wetlands (67%–99% of the time).

FAC = facultative, equal in wetlands or non-wetlands (34%–66% of the time).

FAC+ = subcategory of facultative, equal in wetlands or non-wetlands (50%–66% of the time).

FACU = facultative upland, usually found in non-wetlands (1%–33% of the time).

UPL = upland/no indicator, not found in local wetlands (<1% of the time).

Table 5. Accuracy of wetland plant communities in the draft vegetation map

Plant community type	% correctly classified at the plant community level	% correctly classified as a wetland
Upland	90	N/A
Cold wet forest form	0	100
Willow super alliance	23	93
Red alder alliance	76	96
Coyote brush sedge	58	75
Arroyo willow alliance	65	87
Pacific reedgrass-sedge	71	90
Intro perennial grassland	33	65
Saltgrass alliance	43	100
Rush superalliance	35	81
Tufted hairgrass alliance	25	25
Saturated grass form	0	100
Bullrush alliance	50	90
Cordgrass alliance	50	100
Saturated forb form	0	100
Pickleweed alliance	57	100

Table 6. Management categories and size of Chilean protected areas

Management category	Number	Area	
		acres	hectares
National park	31	21,542,525	8,718,260
National reserve	48	13,312,165	5,387,433
National monument	15	44,181	7,880
Total	94	34,898,871	14,123,573

Source: National Forestry Corporation (2003).

Table 7. Wolves captured, radio-marked, and released in Voyageurs National Park and vicinity, 1987–1991

Age ^a	Sex	n ^b	Weight (kg)		
			\bar{x} (kg)	SD	Range
≥1 yr	M	9	32.7	4.4	29.0–43.1
	F	13	30.8	3.4	25.0–35.5
<1 yr	M	3	17.3	7.2	10.9–25.0
	F	5	15.2	4.1	11.0–20.9

^aEstimated age at time of capture.

^bOne adult male was not weighed.

Table 8. Wolf groups encountered during snow tracking in Voyageurs National Park and vicinity, winter 1987–1988 and 1988–1989

Group Size	1987–1988		1988–1989		Total	
	Frequency	%	Frequency	%	Frequency	%
1	22	55.0	8	23.5	30	40.5
2	12	30.0	14	41.2	26	35.1
3	2	5.0	4	11.8	6	8.1
4	1	2.5	2	5.9	3	4.1
5	2	5.0	3	8.8	5	6.8
6	0	0.0	1	2.9	1	1.4
7	0	0.0	0	0.0	0	0.0
8	1	2.5	1	2.9	2	2.7
9	0	0.0	1	2.9	1	1.4
Total	40	100.0	34	100.0	74	100.0

Illustrations

Park Science and *Natural Resource Year in Review* incorporate illustrative materials into their designs not only as examples of concepts discussed in articles but also to give the publications an attractive visual appearance. For illustrations to meet these objectives they must be prepared and chosen with care. The following list of considerations will help in readying illustrations in a consistent and beneficial manner.

illustrations, charts, and figures

In this discussion *illustration* principally refers to photographs, line drawings, and maps; *chart* refers to graphs, diagrams, and flowcharts. Both are commonly called figures. Tables, which are also illustrations, are described in the “Tables” section.

(CMS 12.56–12.57)

charts *The Chicago Manual of Style* states that charts “should present data in a simple, comprehensible graphic form,” also presenting information more effectively than words alone can. Accordingly, charts should be understandable on their own. Consistency is desirable with regard to type and graphical style where more than one chart is used, particularly if the material presented is similar. Differences in appearance of charts should serve to distinguish particular elements and not be merely decorative.

(CMS 12.10)

placement An illustration should appear as soon as possible after the first text reference to it. It should only be placed before a text reference if it is on the same page or two-page spread as its reference or if the article is too short for it to follow the text reference. In these cases the caption should provide directions to readers explaining its location (e.g., “fig. 1, page 42”).

(CMS 12.11)

text references In *Park Science*, illustrations are generally referenced by figure number in the text of articles, and the word “figure” is spelled out except in simple parenthetical references (e.g., “fig. 2”). An exception is for short articles with an illustration that relates so clearly to the text that the association is self-evident. Nevertheless, a text reference may be appropriate and refer the reader to a photograph, chart, or other type of illustration. When practicable a text reference should come at the end of a sentence to avoid distracting readers from the original passage.

Sections of these lava tubes may collapse soon after cooling or while still flowing with lava, creating cave entrances (fig. 2).

In *Natural Resource Year in Review*, text references are not commonly used. Instead, placement of the illustration near the related article text helps establish a clear association. When necessary, text references can call readers’ attention to a photograph, chart, or the like; however, any reference to the position of an illustration should be specific (e.g., “right;” not “photograph opposite”).

Sage grouse (photo) inhabit upland areas of Acadia National Park.

(CMS 12.12)

numbering In *Park Science*, illustrations that are referenced in the text are numbered and begin with “1” for each article; illustrations used primarily for design purposes (e.g., background images) need not be numbered. Where a figure consists of several parts, each part can be distinguished by a letter (e.g., “fig. 1a”) and portions of a caption can key to the letter. Commonly used in *Natural Resource Year in Review*, another option is to key a caption to an illustration’s specific position on the page (e.g., “top” or “right;” see “text references”). Illustrations that otherwise are not numbered in *Natural Resource Year in Review* may be numbered to indicate a sequence of related illustrations.

Example caption describing location of an illustration:

A salmon camp participant (right) assembles sampling frames at Nez Perce National Historical Park. Camas (below) is a significant park resource and serves as an indicator of ecological health for long-term monitoring.

(CMS 12.28–12.29)

proportion *The Chicago Manual of Style* suggests that the final reproduction size of an illustration should guide its design, including the choice of font size and line weight. Though *Park Science* and *Natural Resource Year in Review* may use different specifications, table 2 details some guidelines that result in pleasing proportions.

Table 2. Proportions among illustration elements		
Illustration size (inches)	Font size (points)	Line weight (points)
4 x 7	8	0.5
5 x 7	10	1
8 x 10	14	1.5

Additionally, labels within an illustration should not vary more than 20% from the smallest to the largest point sizes. Distinction can be achieved as needed with differences in typography (e.g., capitals, italics, boldface).

title A chart or figure title can but need not be included in the figure. When included, it should go at the top and be set flush left in a Frutiger typeface. Alternatively, it can be placed in a caption.

captions, legends, keys, and labels

(CMS 12.8)

As described in *The Chicago Manual of Style*, “the terms *caption* and *legend* are sometimes used interchangeably for the explanatory material that appears immediately below an illustration, or sometimes above it or to the side.” In *Park Science* and *Natural Resource Year in Review* a caption usually consists of full sentences, though a phrase that identifies the basic elements of an illustration may be appropriate. Captions can apply to one or more illustrations, in which case internal directions are needed to link information to illustrations. A key or legend appears inside a figure—though in some instances it could be incorporated into a caption—and identifies symbols, patterns, colors, and the like used to distinguish information in a figure. Labels (words or symbols) call attention to specific features of illustrations.

length and purpose Captions vary in length depending on the information to be explained about the illustration itself and its relationship to the article. One or two sentences are common, sometimes more. If the connection between an illustration and its editorial purpose is clear, a caption can be limited to orienting the reader to the illustration’s basic features. Conversely captions can frame larger issues, for example presenting perspectives on resource management problems and introducing people who work to resolve them. Though brief, they should be stories in their own right and may contain the principal information on a topic conveyed to the reader.

Examples from *Park Science* (below) and *Natural Resource Year in Review* (bottom):

Figure 1. The conflict between modern travel and animal migration caused Parks Canada to employ innovative measures for the safe passage of wildlife across parts of the Trans-Canada Highway. Banff National Park, a world heritage site, retains its original assemblage of Rocky Mountain wildlife, including (clockwise from top left) cougar, grizzly, coyote, and wolf.

An NPS science diver measures the size of queen conchs (*Strombus gigas*) at Buck Island Reef National Monument to document the status and potential recovery of this commercially exploited shellfish in a new “no-take” marine reserve.

capitalization, design, and placement Captions, legends, and keys follow “down” or lowercase style rules as described in the introduction to the “Capitalization” section. Following NPS graphic identity style, each is typically set in a Frutiger typeface, in roman letters, with ragged right justification. In *Park Science*, captions start with a reference to the figure by number followed by a period and the caption. They most commonly appear beneath illustrations, but can also go above or to the left or right of a figure or chart. Usually presented as a part of figures themselves, legends and keys are very brief. If practicable, they should be placed flush left and in a Frutiger typeface.

(CMS 12.58) **identification of symbols** Symbols used in figures should be identified in keys, legends, or captions, as appropriate.

(CMS 12.61) **labels** Labels briefly describe important features in figures and should not repeat explanations in the caption. They are lowercased (except for proper nouns) and set in a Frutiger typeface, flush left, with ragged right justification. Abbreviations should be easily recognizable or explained in a key or caption.

x and y axes The axes of graphs (*x* for horizontal; *y* for vertical) should be labeled to explain what each represents and the corresponding unit of measure, as needed. The label for the *y* axis is read from the bottom up with the bases of the letters oriented toward the center of the chart.

(CMS 12.32) **punctuation** Captions consisting of a few descriptive words that do not form a complete sentence need not end with punctuation (e.g., a period). However, incomplete sentences used in a caption with complete sentences should end in the appropriate punctuation mark. If captions in a publication generally are full sentences, for consistency, all captions should end with punctuation.

Example from *Park Science* combining incomplete and complete sentences:

Figure 1. Partial skull of *Smilodon gracilis* from the Port Kennedy Cave, Valley Forge National Historical Park, Pennsylvania. This gracile saber-toothed cat was first described by paleontologist Edward Drinker Cope from material collected at the Port Kennedy Cave. The reconstructed length is about 12 inches.

Legends and keys are punctuated with commas and semicolons, as needed, but seldom end in terminal punctuation such as a period.

credit lines
(CMS 12.42–12.51;
examples at HFC pp. 5–6)

The source of an illustration should be identified in a credit line. An exception is an illustration created by the author of the article, who is credited in a byline. In this case, “Photographs by the author” or a similar notice may suffice. In *Park Science* the credit line is closely associated with the illustration, commonly appearing parallel to its bottom or side, or at the end of the caption. It is typographically distinct. In the highly illustrated *Natural Resource Year in Review*, credit lines can be listed on one page near the end of the publication.

copyright and permission The creator of an illustration such as a photograph generally owns the copyright, a series of exclusive rights that include the right to reproduce, distribute, display, and create derivatives of the work. Unless fair use applies—potentially allowing use of a protected work for purposes of criticism, comment, news reporting, teaching, scholarship, or research—copyrighted material requires licensing (i.e., formal permission) for specific uses (e.g., print, Web, PDF). The notice (including fair use) typically but not always indicates “copyright,” preferably written out, though a license may specify use of the copyright symbol (“©”) or some other language in the credit line. An illustration created from another graphic or from particular data should credit the original source.

format Credit lines should be brief, listing the name of the copyright owner or creator of the illustration and any other pertinent information, such as the year, as desired (see HFC, pp. 5–6). As a courtesy, *Park Science* and *Natural Resource Year in Review* credit creators of public-domain illustrations, including NPS staff. The owner of the illustration is listed before the creator (e.g., “NPS/Jeff Selleck” or “NPS photo by Jeff Selleck”).

Copyright Greg Stock (image creator and copyright holder; use licensed to NPS)

Wisconsin State Herbarium/Dennis W. Woodland (institution/creator; use licensed to NPS)

Chris Johns/National Geographic Image Collection (creator/stock house)

Mary Travaglini, The Nature Conservancy (creator/institution)

NPS/Santa Monica Mountains NRA (public domain image of NPS, park) USGS/Erinn Muller (public domain, property of USGS, created by person)

National Park Service (map) and Missouri Tree-Ring Laboratory (data)

Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Environmental Affairs, modified by Katherine Joseph

Courtesy of Envirosan, Inc., and the University of Pennsylvania (privately owned but not created by the owner; use licensed to NPS for fee or donated; owner retains rights)

Courtesy of Bob Lillie (same; use donated to NPS; creator retains rights)

reproduction Reproduction of an illustration should retain integrity of and not misrepresent the original. In particular, a subject’s original position and action should not be modified. Additionally, scaling should always maintain the horizontal-to-vertical aspect ratio in the original. Likewise, flipping a photograph horizontally, such as to have a person face toward the center of a page, is inappropriate.

cropping, scaling, and orienting Illustrations may be cropped and scaled as necessary in the layout. However, care must be taken to clearly show the center of interest in photographs and all pertinent information in charts. If cropping or resizing does not solve a layout problem, the illustration may need to be redesigned, involving review by the author.

photo editing Photographs are commonly edited to optimize their reproduction in print and on the Web. Acceptable changes include adjustments to brightness and contrast, dynamic range, conversion of a color image to grayscale or duotone, sharpening, removal of dust and scratches (but not physical objects in the scene even if distracting), and dodging and burning, as long as the objective is to improve the image for reproduction. The integrity of the original must be retained; however, the application of filters that impart an obvious artistic quality to an image for design purposes is permitted so long as the effects do not change key elements of an image and do not mislead readers. Modifications that might be misconstrued should be noted briefly in the caption.

image quality Resolution of photographs intended for print applications must be 1.5–2.0 times the output resolution (in lines per inch) to reproduce satisfactorily. *Park Science* and *Natural Resource Year in Review*, which are printed at 150 lines per inch, require photographs of 225 to 300 pixels per inch resolution. Resampling an insufficiently low-resolution photograph will not yield satisfactory results; the original image must be of adequate resolution, whether scanned from a slide or print or made in a digital camera. Line drawings, which are often reproduced as a “bitmap” (i.e., black-and-white), need to be of even higher resolution to reproduce sharply in print. They should be created at 4.0 times the output resolution, or 600 pixels per inch, for proper reproduction in these publications.

Citations and Documentation

Documentation of scholarly reference sources in *Park Science* and *Natural Resource Year in Review* follows the author-date system outlined in *The Chicago Manual of Style* (16.4 and 16.90). Format and style for particular types of sources are based on the journal *Ecology*. The author-date system combines a reference list at the end of the article with brief text citations of the author's last name and the year of publication within the article, which serves as a pointer to the source in the full list. Text citations are set off in parentheses, generally at the end of a sentence to avoid disruption of a passage. No punctuation separates the author and year of publication. The reference list is alphabetized letter by letter (word spaces are ignored), as described in CMS 18.56–18.57 and 18.60–18.73. House style, however, does not use boldface type to indicate publication volume number.

When forming reference lists, keep in mind the primary purpose of source documentation: to enable readers to consult the original sources of information cited in an article. Authors and editors should seek to provide enough information that original sources can easily be tracked down.

general guidelines

Titles of works follow sentence-style capitalization; however, the first word after a colon, for example separating the title from the subtitle, is capitalized.

Machado, G., and P. S. Oliveira. 2002. Maternal care in the neotropical harvestman *Bourguyia albiornata* (Arachnida: Opiliones): Oviposition site selection and egg protection. *Behaviour* 139:1509–1524.

Insert a comma in a page number with five digits or more. An en dash is used in ranges of numbers.

White, G. C., and K. P. Burnham. 1999. Program MARK: Survival estimation from populations of marked animals. *Bird Study* 46 (Supplement):120–139.

Wilmshurst, J. F., J. M. Fryxell, B. P. Farm, A. R. E. Sinclair, and C. P. Henschel. 1999. Spatial distribution of Serengeti wildebeest in relation to resources. *Canadian Journal of Zoology* 77:1223–1232.

Stenseth, N. C., H. Viljugrein, T. Saitoh, T. F. Hansen, M. O. Kitilsen, E. Bolviken, and F. Glochner. 2003. Seasonality, density dependence, and population cycles in Hokkaido. *Proceedings of the National Academy of Sciences (USA)* 100:11,478–11,483.

Use arabic (not roman) numerals for volume numbers, parts, and chapters.

Kroodsma, D. E. 1982. Learning and the ontogeny of sound signals in birds. Pages 1–23 in D. E. Kroodsma and E. H. Miller, editors. *Acoustic communication in birds. Volume 2*. Academic Press, New York, New York, USA.

Hart, S. C., J. M. Stark, E. A. Davidson, and M. K. Firestone. 1994. Nitrogen mineralization, immobilization and nitrification. Pages 985–1018 in S. H. Mickleson, editor. *Methods of soil analysis. Part 2: Microbial and biochemical properties*. Soil Science Society of America, Madison, Wisconsin, USA.

Patrick, R., and C. W. Reimer. 1975. The diatoms of the United States exclusive of Alaska and Hawaii. Volume 2, part 1. Monograph 13. The Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania, USA.

In parenthetical citations in the body of the article, a semicolon separates more than one author-year combination. According to *The Chicago Manual of Style* (16.119), the order in which multiple author-year combinations are given “may depend on what is being cited, and in what order, or it may reflect the relative importance of the items cited.” If those criteria do not apply, chronological order is recommended. If more than one citation has the same year, the order should be alphabetical by author's last name.

(Chiariello and Field 1996; Körner et al. 1997; Leadley et al. 1999; Niklaus et al. 1998, 2001 2002; Finzi et al. 2002)

Be sure to clarify in brackets any acronym that appears in the citation.

Schwing, F. B. 2002. The state of the California Current, 2001–2002: Will the California Current system keeps its cool, or is El Niño looming? CalCOFI [California Cooperative Oceanic Fisheries Investigations] Reports 43:31–68.

If a publication is “in press” at the time of publication, follow the examples below. When known, the year should be included in the citation.

Prasad, R. P., and W. E. Snyder. 2006. Polyphagy complicates conservation biological control that targets generalist predators. *Journal of Applied Ecology*, *in press*.

Getz, W. M., and J. O. Lloyd-Smith. 2006. Basic methods for modeling the invasion and spread of contagious disease. *In* Z. Feng, U. Dieckmann, and S. A. Levin, editors. *Disease evolution: Models, concepts, and data analysis*. American Mathematical Society, Providence, Rhode Island, USA, *in press*.

For any one year, if more than one article has an author with the same last name or if the same author has more than one article, include letters with the year, starting with “a” as follows:

Bauer, A. M. 1992a. Lizards. Pages 126–173 *in* H. G. Cogger and R. G. Zweifel, editors. *Reptiles and amphibians*. Smithsonian, New York, New York, USA.

Bauer, R. T. 1992b. Testing generalizations about latitudinal variation in reproduction and recruitment patterns with scyoniid and caridean shrimp species. *Invertebrate Reproduction and Development* 22:193–202.

Include the names of all authors and editors in the citation when it appears in the “Literature Cited” section; “et al.” (no italics) is acceptable only in parenthetical citations in the body of the article.

Houghton, J. T., Y. Ding, D. J. Griggs, M. Noguer, P. J. van der Linden, X. Dai, K. Maskell, and C. A. Johnson, editors. 2001. *Climate Change 2001: The scientific basis*. Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK.

When the publication does not provide names of authors, using an agency or company name is acceptable.

R Development Core Team. 2004. *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria.

If a cited article is written in a language other than English (and an English translation has not been published), present the citation in the original/foreign form, as follows:

Ellenberg, H., H. E. Weber, R. Düll, V. Wirth, W. Werner, and D. Paulissen. 1992. *Zeigerwerte von Pflanzen in Mitteleuropa* [In German]. *Scripta Geobotanica* 18. Verlag E. Goltze KG, Göttingen, Germany.

personal communications

Following the format of the Denver Service Center *Editing Reference Manual* (p. 8), do not cite in-house (i.e., park or office) personal communications. As *The Chicago Manual of Style* (17.208–17.209) suggests, consider recasting the personal communication as a sentence. However, if listing as a note is preferred, cite the personal communication in parentheses in the following order:

1. agency or organization (if any; commonly used acronyms are acceptable)
2. initials and last name of individual

3. job title (follow this by the name of the person who received the information, if it is not the author)
4. type of communication (phone call, memo, e-mail message, interview; use “personal communication” if you do not know)
5. date (use “European style”)
 - (USFWS, L. A. Barclay, field supervisor, letter to D. A. Falvey, National Park Service, Denver, 22 November 1991)
 - (USGS, C. R. Lehman, computer specialist, personal communication, 31 October 2005)
 - (Denver Botanic Gardens, G. E. Noonan, plant care supervisor, telephone conversation with Sandy Schuster, National Park Service, Denver, 10 March 2004)
 - (Jones and Jones Architects, Steve Durrant, e-mail to Jackie Powell, National Park Service, Denver, 16 August 1996)

examples of references

The following list provides many examples of types of information sources that are commonly cited in *Park Science*. They follow *Ecology* style.

act

U.S. Congress, House of Representatives. 1982. Endangered Species Act amendments of 1982. Second session, House Report 835.

U.S. Endangered Species Act of 1973 (Public Law 93-205, 81 Stat. 884, Dec. 28, 1973).

book

Sokal, R. R., and F. J. Rohlf. 1981. Biometry. Freeman and Sons, San Francisco, California, USA.

Sokal, R. R., and F. J. Rohlf. 1995. Biometry. Third edition. W. H. Freeman, New York, New York, USA.

edited volume

Stockner, J., editor. 2003. Nutrients in salmonid ecosystems: Sustaining production and biodiversity. Symposium 34. American Fisheries Society, Bethesda, Maryland, USA.

paper in edited volume

Abrams, P. A., B. A. Menge, G. G. Mittelbach, D. Spiller, and P. Yodzis. 1996. The role of indirect effects in food webs. Pages 371–395 in G. A. Polis and K. O. Winemiller, editors. Food webs: Integration of patterns and dynamics. Chapman and Hall, New York, New York, USA.

Cole, D. W., and S. P. Gessel. 1992. Fundamentals of tree nutrition. Pages 7–16 in H. N. Chappell, G. F. Weetman, and R. E. Miller, editors. Forest fertilization: Sustaining and improving nutrition and growth of western forests. Contribution 73. Institute of Forest Resources, University of Washington, Seattle, Washington, USA.

Federal Register

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Habitat conservation plan assurances (“no surprises”) rule. Federal Register 63:8859–8873.

journal article

Chapin, F. S., E. D. Schulze, and H. A. Mooney. 1990. The ecology and economics of storage in plants. Annual Review of Ecology and Systematics 21:423–447.

journal article supplement

Schweder, T. 2003. Integrative fish stock assessment by frequentist methods: Confidence distributions and likelihoods for bowhead whales. Scientia Marina 67 (Supplement 1):89–97.

map

Hammond, E. H. 1964. Classes of land-surface form in the forty-eight states, U.S.A. *Annals of the Association of American Geographers* 54: Map supplement 4 (scale 1:5 million).

Küchler, A. W. 1964. Potential natural vegetation map (scale 1:7,500,000). Pages 89–91 *in* The National Atlas of the United States. U.S. Geological Survey, Washington, D.C., USA.

Natural Resource Year in Review article

When citing an article in *Natural Resource Year in Review*, follow the format for a report:

Jackson, B., and G. Eckert. 2005. Colorado River basin drought. Pages 20–21 *in* J. Selleck, editor. *Natural Resource Year in Review—2004*. Publication D-1609. National Park Service, Denver, Colorado, and Washington, D.C., USA.

Park Science article

When citing an article in *Park Science*, follow the format for a journal article:

Werner, H. W. 2004. Accuracy assessment of National Wetland Inventory maps at Sequoia and Kings Canyon National Parks. *Park Science* 23:19–23.

plan

Subcommittee on Pacific Brant. 2002. Pacific Flyway management plan for Pacific Brant. Pacific Flyway Study Committee, U.S. Fish and Wildlife Service, Portland, Oregon, USA.

proceedings of meeting

Brundrett, M. C., L. Melville, and L. Peterson. 1994. Practical methods in mycorrhizal research. Ninth North American Conference on Mycorrhizae, Guelph, Ontario, Canada. Mycologue Publications 161, Waterloo, Ontario, Canada.

Rollinson, T. J. D. 1988. Growth and yield of western red cedar in Great Britain. Pages 61–65 *in* N. J. Smith, compiler. *Western red cedar—Does it have a future?* Conference proceedings, University of British Columbia. Faculty of Forestry, University of British Columbia, Vancouver, British Columbia, Canada.

Swetnam, T. W., and P. M. Brown. 1992. Oldest known conifers in the southwestern United States: Temporal and spatial patterns of maximum age. Pages 24–38 *in* M. R. Kauffman, W. H. Moir, and R. L. Bassett, technical coordinators. *Old-growth forests in the Southwest and Rocky Mountain regions, proceedings of a workshop, 9–13 March 1992, Portal, Arizona*. USDA Forest Service General Technical Report RM-213. Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, Fort Collins, Colorado, USA.

ter Braak, C. J. F., A. J. van Strien, R. Meijer, and T. J. Verstrael. 1994. Analysis of monitoring data with many missing values: Which method? Pages 663–673 *in* E. J. M. Hagemeyer and T. J. Verstrael, editors. *Bird numbers 1992. Distribution, monitoring and ecological aspects. Proceedings of the 12th International Conference, International Bird Census Council and European Ornithological Atlas Committee*. Sovon, Beek-Ubbergen, The Netherlands.

publication series

Hoagland, D. R., and D. J. Arnon. 1950. The water culture method for growing plants without soil. Circular 347. California Agricultural Experimental Station, Oakland, California, USA.

Fitch, H. S. 1970. Reproductive cycles in lizards and snakes. University of Kansas Museum of Natural History Miscellaneous Publications 52:1–247.

report/government document

Hooge, P. N., W. Eichenlaub, and E. Salomon. 1999. The animal movement program. U.S. Geological Survey, Alaska Biological Science Office, Anchorage, Alaska, USA.

Boyd, R. J. 1965. Western red cedar (*Thuja plicata* Donn). Pages 686–691 *in* H. A. Fowells, editor. *Silvics of forest trees of the United States*. Agriculture Handbook 271. U.S. Department of Agriculture, Washington, D.C., USA.

- Calhoun, J. B., and J. U. Casby. 1958. Calculation of home range and density of small mammals. U.S. Public Health Monograph 55. U.S. Government Printing Office, Washington, D.C., USA.
- Miller, I., B. Lachance, W. G. Burkman, and D. C. Allen. 1991. North American Sugar Maple Decline Project: Organization and field methods. General Technical Report NE-154, USDA Forest Service, Radnor, Pennsylvania, USA.
- Besbeas, P., S. N. Freeman, B. J. T. Morgan, and E. A. Catchpole. 2001. Stochastic models for animal abundance and demographic data. University of Kent Technical Report UKC/IMS/01/16. University of Kent, Kent, UK.
- Freeman, S. N., R. A. Robinson, J. A. Clark, B. M. Griffin, and S. Y. Adams. 2002. Population dynamics of starlings *Sturnus vulgaris* breeding in Britain: An integrated analysis. Pages 121–140 in H. Q. P. Crick, R. A. Robinson, G. F. Appleton, N. A. Clark, and A. D. Rickard, editors. Investigation into the causes of the decline of starlings and house sparrows in Great Britain. British Trust for Ornithology Research Report 290. Department for Environment Food and Rural Affairs, Bristol, UK.

software

- Systat Software. 2000. SYSTAT. Version 10. Systat Software, Point Richmond, California, USA.
- ESRI (Environmental Systems Research Institute). 1998. ArcView version 3.1. ESRI, Redlands, California, USA.
- Gotelli, N. J., and G. L. Entsminger. 2001. EcoSim: Null models software for ecology. Version 7.0. Acquired Intelligence Inc. and Kesey-Bear, Jericho, Vermont, USA.

thesis

- Davidson, E. D. 1975. Demography of *Lupinus arboreus* at Bodega Head, California. Dissertation. University of California, Davis, California, USA.
- Perelberg, A. 2000. Ecological and behavioral aspects of the reintroduced Persian fallow deer population (*Dama dama mesopotamica*). Thesis. Tel Aviv University, Tel Aviv, Israel.

unpublished report

- Conant, B., and J. I. Hodges. 1995. Western brant population estimates. U.S. Fish and Wildlife Service Unpublished Report, Juneau, Alaska, USA.
- Conant, B., and J. F. Voelzer. 2001. Winter waterfowl survey: Mexico west coast and Baja California. U.S. Fish and Wildlife Service Unpublished Report, Juneau, Alaska, USA.

volume

- May, R. M. 1974. Ecosystem patterns in randomly fluctuating environments. Progress in theoretical biology. Volume 3. Academic Press, New York, New York, USA.

Web source

(Example 1—published on Web)

- Colwell, R. K. 1997. Estimates: Statistical estimation of species richness and shared species from samples. Version 5. User's guide and application available from <http://viceroy.eeb.uconn.edu/estimates> (accessed 7 March 2001).

(Example 2—available on Web)

- Personal Watercraft Industry Association (PWIA). 2000. PWIA splash page. PWIA, Washington, D.C. Available at <http://www.pwia.org> (accessed 7 July 2000).

Guide to Preferred Spelling, Usage, and Word Compounding

This section presents an alphabetical listing of words that commonly appear in *Park Science* and *Natural Resource Year in Review* and provides adopted spellings for words that may have more than one acceptable spelling. Additionally, it highlights problematic words and is meant to ensure consistency with spelling, in word usage, and in forming compounds. This list also may be useful for authors and editors of other natural resource series.

abbreviations and symbols for parts of speech

adj = adjective; *adv* = adverb; *n* = noun; *pa* = predicate adjective; *prep* = preposition; *um* = unit modifier (compound adjective); *v* = verb

* = verb forms are open (e.g., a hazardous waste *cleanup* was required, *but* the maintenance staff was asked to *clean up* the site).

abbreviations for sources

Sources for particular spellings, usage, and compounds are abbreviated as follows in this section. (See the “Adopted References” section for a complete list of adopted references and related notes.)

AGI = *Glossary of Geology*, American Geological Institute, fifth edition, 2005

AOU = *The A.O.U.* (American Ornithologists’ Union) *Check-list of North American Birds*, 7th edition, 1998; and 47th supplement, as published in *The Auk* 123(3):926–936.

CMS = *The Chicago Manual of Style*, 15th edition, 2003

DSC = *Editing Reference Manual*, Denver Service Center, National Park Service, January 2005

H = house rule; also no abbreviation. Preferred spelling, usage, and compounding even though it may contradict the adopted references.

HFC = *Editorial Style Guide*, Harpers Ferry Center, National Park Service, November 2006

MW = *Merriam-Webster’s Collegiate Dictionary*, 11th edition, 2003

Note: This authoritative source lists compounds of many prefixes: co-, counter-, hyper-, inter-, mis-, multi-, non-, out-, over-, post-, pre-, re-, self-, sub-, super-, ultra-, and un-.

guide to compound forms

Keywords followed by an indented list are used to form compounds. If it forms the first part of a compound the keyword appears alone (see *snow* below). An en dash preceding a keyword indicates that the word (not including the dash) is used as the last part of a compound (e.g., *-grass* below). Keywords used at the beginning of a compound are listed before compound forms that end with the keyword. Compounds may be solid (i.e., two words joined as one), hyphenated, or two words.

snow

snowpack (n)

-grass

sea grass (n) (H)

alphabetical list of words **A**

a or an when used before h Use *a* before a pronounced *h*; use *an* before a silent *h* (HFC p. 2).

a historic moment	an honor
a hysterical patient	an heir
a hoary marmot	an honest man

abandoned Avoid when writing about American Indian dwellings (HFC p. 2).

The ancestral Puebloan people left their homes about 800 years ago.

–about*

runabout (n) (DSC), *but* run about (v) (MW)
turnabout (n) (MW)

above-average (um)

aboveground (adj, adv) (MW)

access Avoid as a synonym for *reach* or *get to* (word is too similar to *accessible*) (HFC p. 2).

You can get to the park from the south via I-95.

accessible It means that facilities can be used by persons with disabilities. *See* disabled (HFC p. 2).

across-the-board (um)(MW)

aerial telemetry (n); aerial-telemetric (um)

aesthetic (MW)

affect/effect Use *affect* only as a verb meaning “to produce an effect upon.” (*Affect* as a noun is used only in psychological contexts.)

Construction would affect 20.6 acres (8.34 ha) of pine/juniper forest.

The construction will have an effect on my commute.

Use *effect* as a noun meaning “something that inevitably follows an antecedent (as a cause)”; it is synonymous with *impact* in our work according to Council on Environmental Quality guidelines. As a verb, *effect* means “to cause to come into being” or “to accomplish.”

The superintendent will effect these changes by June 1.

African American (or black) No hyphen (HFC p. 2).

African Americans traveled north on the Underground Railroad.

the African American soldier

age class (n)

age-specific (adj)

air-dry (v) air-dried (adj)•

altitude (n) Applies to something in the air; *see* elevation

a.m. (HFC)

America (HFC p. 2) Widely used synonym for the United States of America; use *American* to describe the people.

–American (DSC)

Euro-American *but* African American and Chinese American

American Indian Use specific tribal name (singular noun) (e.g., Navajo, Lakota, Tlingit) or use *American Indian*. If possible, avoid using *Native American* (it is ambiguous and least desirable of alternatives); but some tribes prefer *Native American*—use preference of area groups (HFC p. 2).

The Navajo entered Canyon de Chelly about 300 years ago.

American Revolution affiliations Do not capitalize *patriot*, *loyalist*, or *tory* (except if in quoted material); *but* Whig and Tory as members of political parties; Continental Army troops (HFC p. 2).

Anasazi Avoid, but can clarify at first mention; *see* ancestral Puebloan people (HFC p. 2).

These ancestral Puebloan people, often called Anasazi, used ladders made of ponderosa pine to reach the canyon’s ledges.

ancestral Puebloan people Predecessors of today’s Pueblo and Hopi Indians; try to avoid *Anasazi* except at first mention (HFC).

anti

antilitter (MW)

antipredator (MW)

antitechnological (MW)

antiwar (MW)

but

anti-immigrant (use hyphen with words beginning with *i*)

anyplace (MW)

appendixes *not* appendices (MW)

archaeology *not* archeology (MW)

–area

Bay Area (for San Francisco)

arms (small) Firearms that can be carried in the hand, such as muskets, pistols, rifles, carbines, and shotguns. *See* artillery (HFC p. 3).

–around

turnaround* (n) (MW)

arrowwood (MW)

artillery Large-caliber weapons, such as cannon, howitzers, and missile launchers, usually supported on a carriage and operated by crews. *See* arms (HFC p. 3).

The Napoleon 12-pounder (*not* 12-pound) cannon was the most popular smoothbore artillery piece in the Union and Confederate armies.

artwork (n) (MW)

–aside*

set-aside (n) (MW)

audio

audiocassette (MW)

audiovisual (adj), audiovisuals (n, plural) (MW)

–away

breakaway* (n, adj) (MW)

cutaway* (n, adj) (MW)

B

Bachelor

Bachelor of Arts (BA) (CMS)

Bachelor of Science (BS) (CMS)

bachelor's (n)

bachelor's degree (n)

back

back-arc (um) (AGI)

back-barrier (um)

back bay (n) (DSC)

backbeach (AGI)

backcountry (n) (MW)

back-reef (um) (AGI)

backscatter (n, v) (MW)

backshore (n) (AGI)

backswamp (n) (AGI)

backup* (n) (MW)

backwall (n) (DSC)

backwater (n, um) (MW)

–back

feedback (n, adj) (MW)

leaseback (n) (MW)

setback (n) (MW)

ball field (DSC)

–bank

riverbank (MW)

streambank (n) (DSC)

barrier

barrier beach (um) (DSC)

barrier island (n, um) (MW)

barrier reef (MW)

base

base course (DSC)

baseline (n, adj) (MW)

basket making

bathhouse (MW)

battle

battlefield (n) (MW)

battleground (n) (MW)

battle line (n) (MW)

bay

bayfront (DSC)

bayshore (DSC)

bayside (DSC)

beach

beach grass (n) (MW)

beachside (adj) (MW)

bear-proof (um) (DSC)

–bed

coalbed (DSC)

railbed (DSC)

riverbed (MW)

streambed (MW)

bedding plane (n) (AGI)

bedding-plane (um) (AGI)

belowground (adj, adv) (MW)

best

best management practices

best-selling (um) (MW)

best-understood (adj, um) (MW)

bio

biocontrol (MW)

biodiversity (MW)

bioindicator

biomonitoring

biosphere reserve (wording) “[Park name], part of a major ecosystem that protects the diversity of life, was named a biosphere reserve in [date]” (HFC p. 3).

bipolar (MW)

bird

bird nesting (n) (DSC), bird-nesting (um)

bird nest (n)

bird-watch (v) (MW), birdwatching (n) (DSC)

bird-watcher or birder (n) (MW)

bison Commonly called buffalo. If writing *bison*, clarify at first mention. Use park’s preference (HFC p. 3).

Bison, commonly called buffalo, graze on this prairie.

black See African American (HFC p. 3).

blockhouse (n) (MW)

board

advisory board, *but* National Park System Advisory Board

boardsurfing (DSC)

boathouse (n) (MW)

boat launch (n) Preferred over *boat ramp* (ramps are paved—boat launches include paved and unpaved entrances) *but* boat-launching (um) (HFC p. 3).

bodysurf (v) (MW)

bookkeeping (n) (MW)

boomtown (n) (MW)

–borne

airborne

windborne

–bound

nestbound

snowbound

westbound

brainstorming (n) (MW)

break

breakaway* (n) (MW)

breakdown* (n) (MW)

break off (v) (MW)

breakout* (adj) (MW)

break room (DSC)

breakthrough* (n, adj) (MW)

breakup* (n) (MW)

breeding-age (um)

brick

brickfield (n) (MW)

bricklayer (n) (MW)

brick making (H)

brickwork (n) (MW)

brickyard (n) (MW)

broad-scale (um)

by

byline (MW)

bylaws (MW)

by-product (n) (MW)

byway (n) (MW)

C

callback (n) (MW)

camp

campground (n) (MW), *but* Aspenglen Campground

campstove (HFC)

Canada goose *not* Canadian goose (AOU)

cannon Usually *cannon* can be both singular and plural (same word, no *s*), but *cannons* is also correct. Be consistent; use the park's preference. *See* artillery (HFC).

cannot (MW)

capital, capitol Spelled with an *a*, it means the city where a seat of government is located; do not capitalize. Spelled with an *o*, it means the building where the business of government takes place. Capitalize when referring to the U.S. Capitol in Washington, D.C., and when referring to state capitols (HFC).

Annapolis is the capital of Maryland.

The Virginia Capitol is in Richmond.

catch-22 (n) (MW)

cattle guard (n) (MW)

Celsius (use °C) If spelling out, use *centigrade*.

centerline (n) (MW)

century 16th-century fort; the 20th century (HFC)

channeled (v) (MW) *not* channelized

check

check-in* (n) (MW)

checklist (n) (MW)

checkout* (n) (MW)

checkup* (n) (MW)

Civil War Confederates are members of the Confederate army. Federals are members of the Union army. Use *the North* sparingly in referring to the United States government during the Civil War; use *Union* or *Federal Government*. Use *the South* sparingly in referring to the 11 states that seceded; use *the Confederate States of America* (formal name) or *the Confederacy*. Do not use *Yankee* as a synonym for Union soldiers; avoid except in quoted material. *Unionist*: do not use as

a synonym for Union soldiers; avoid except in quoted material. *Rebel*: do not use as a synonym for Confederate; avoid except in quoted material. *See* federal (HFC p. 4).

cleanup* (n, adj), clean up (v)

clear-cut* (n—e.g., clear-cut forest, adj—e.g., clear-cut case) (MW); clear-cutting (n) (MW)

closed-captioned (um, pa) (MW); closed-captioning (n) (MW)

close-up* (n), close up (v, adj, adv)

club moss (n) (MW)

co

coauthor (n, v) (MW)

cochampion (n, v) (MW)

codominant (adj)

coevolve (v) (MW)

coexist (v) (MW)

cohabit (v) (MW)

cohost (n, v) (MW)

coop (n) (MW)

cosponsor (n, v) (MW)

covariant (adj) (MW)

coworker (n) (MW)

coal

coalbed (DSC)

coalfield (n) (MW)

coal seam (n) (MW)

coastal

coastal zone (um) (DSC)

commenter (related to NEPA process; *not* commentor); *commentator* (one who gives commentary)

comprise/compose As stated in *The Gregg Reference Manual* (p. 289, ¶1101), “*Comprise* means ‘to include, contain, consist of’; *compose* means ‘to make up.’ The parts *compose* (make up) the whole; the whole *comprises* (includes) the parts; the whole is *composed* of (*not* is comprised of) the parts.”

The National Park System comprises 388 areas covering more than 84 million acres (34 million ha).

Nearly 390 areas compose the National Park System.

Do not use *comprise* in the passive (comprised of).

The National Park System is *composed* of (is made up of) 388 units. *not* The National Park System is *comprised of* 388 units.

concession

concession operated (pa) (DSC)

concession-operated (um) (DSC)

concessioner (n) (*not* concessionaire)

Confederate *See* Civil War (HFC).

congressional, *but* Congressional Medal of Honor; Congress (legislative body)

controlled, controlling (MW)

convince/persuade (CMS 5.202) *Convince* is associated with beliefs; *persuade* is associated with actions.

His wife finally persuaded him to buy a suit. [action]

The lawyer convinced the jury of her client's innocence. [belief]

cooperative (um, n) (MW)

cooperative agreement (DSC)

cooperative management (DSC)

core city (n) (MW)

cost

cost-effective (adj) (MW)

cost share (v)

cost-sharing (um) (DSC)

cost sharing (n, pa) (DSC)

cougar mountain lion; panther; puma. Use the park's preference (HFC).

counseled (MW)

counter

counterdemonstrate (MW)

countergovernment (MW)

counterscientific

counterstrategy (MW)

–country

backcountry (n) (MW)

cross-country (um, adv, n) (MW)

frontcountry (avoid if possible, bureaucratic jargon; *use* developed area) (HFC)

countywide (adj) (DSC)

courthouse (n) (MW)

craft shop (n)

crestline (n) (DSC)

crime prevention (um, n) (DSC)

crisscross (adj, adv, n, v) (MW)

criteria (plural); **criterion** (singular) (MW)

cross

cross-check (n, v) (MW)

cross-country (um, adv, n) (MW)

crosscut (v, n, um), crosscutting (n) (MW)

crossover* (n, um)

cross-reference (n, v) (MW)

cross section (n) (MW), cross-section (v) (MW)

cross-sectional (adj) (MW)

–cycle

life cycle (n) (MW)

life-cycle (um) (DSC)

D

data plural, *but* singular or plural in construction

database (n, v) (MW)

data logger (n)

data set (n, um)

but The data are correct.

day

day hiker(n) (DSC)

day labor (n) (DSC)

daytime (MW)

day-to-day (um) (MW)

day use (n) (DSC); day-use (adj) (HFC)

day user (n)

day visit(or) (n) (DSC)

–day

skier day (n) (DSC)
skier-day (um) (DSC)
visitor day (n) (DSC)
visitor-day (um) (DSC)

decision

decision maker (DSC)
decision making (n); decision-making (um) (DSC)

degree

See temperature.

Depression

 for the Great Depression during the 1930s (HFC)

die

dieback (n) (MW)
die-off* (n) (MW)

disabled Avoid *handicapped* or *the disabled*—put the “person” before the disability; write *persons or visitors with disabilities* (HFC p. 7).

The Longstocking Trail is accessible to visitors with disabilities.

The visitor center has video tours of the park for persons with disabilities.

The Pelican Trail is wheelchair-accessible.

disburse/disperse Use *disburse* as a verb meaning “to make payment; to pay out.” Use *disperse* as a verb meaning “to cause to become spread widely.”

discernible (MW) *not* discernable

discover (territory) Avoid; use *explore*, *chart*, *venture*, *scout*, etc. (HFC p. 7).

disease-free (um)

dog

dogsledding (DSC)
doghouse (n) (MW)
dog-walking (um), *but* dog walking (n) (DSC)

double-sided (um)

Douglas fir (MW) *not* Douglas-fir

down

downgrade (n) (MW)
downlake (adj) (DSC)
downplay (v) (MW)
downriver (adv, um) (MW)
downsize (v) (MW)
downslope (adj, adv) (MW)
downstream (adj, adv) (MW)
downtime (n) (MW)
downvalley (adj, adv)
downwind (adj, adv) (MW)

–down

breakdown* (n) (MW)
drawdown* (n) (MW)
letdown* (n) (MW)
rundown* (n) (MW); run-down (um) (MW)
shutdown* (n) (MW)
takedown* (n, adj) (MW)
turndown* (n) (MW)

drainageway (n) (DSC)

drawdown (n) (MW), draw down (v) (MW)

drive

drive-by* (n, adj) (MW)
drive-through* (n, adj) (MW)
drive-up* (adj) (MW)

drop-off* (n) (MW)

due to/because of (Gregg ¶1101, p. 290) According to *The Gregg Reference Manual*, “*Due to* introduces an adjective [sic] phrase and should modify nouns. It is normally used after some form of the verb *to be* [(e.g., *is*, *are*, *was*, and *were*)]. . . . *Because of*, *on account of*, [and owing to] introduce adverbial phrases and should modify verbs.”

Her position is due to hard work and an understanding of the National Park Service. (*Due to* modifies *position*.)

She became superintendent because of hard work and an understanding of the National Park Service. (*Because of* modifies *became*.)

dune

dune field (use *dune complex*)
dune rock
duneland (n)* (MW)

dune sand
dune stabilizing (pa); dune-stabilizing (um) (DSC)
dune valley

E

each other Use for two people or things; use *another* for more than two people or things.

earmark (n, v) (MW)

Earth, earth *Earth* is our planet; *earth* is soil or dirt (HFC p. 7, AGI). Avoid *the* before *Earth* if possible.

east, eastern Lowercase compass directions; minimize use of capital letters except for specific regions (or popular place-names); Eastern Shore of Maryland; East Coast; the East is east (HFC p. 8).

electrical line (n) (DSC)

elevation The height of an earthbound object or feature. *See* altitude.

elicit/illicit Use *elicit* as a verb meaning “to call forth or draw out (as information or a response).” Do not confuse with *illicit*, an adjective meaning “unlawful.”

elk Commonly used name for wapiti (a large North American deer) (HFC p. 8).

e-mail (hyphenated) (adj, n, v) (MW)

en route (adv, adj) (MW)

ensure/insure/assure Use *ensure* as a verb when the meaning is to make certain something will happen: The plan will ensure the preservation of resources. Use *insure* for providing or obtaining insurance: The national flood insurance program insures against loss. Use *assure* to inform positively: I assure you it will be done (HFC p. 8).

Euro-American (n) Avoid; be specific when possible (HFC p. 8).

Sir Francis Drake, English mariner
Juan Rodriguez Cabrillo, Portuguese explorer
French missionaries
settlers from the East Coast

everyday (um), every day (n) (MW)

exceedance (air quality) (MW)

explorers People venturing into territory unknown to them (area may be already populated; avoid *discoverers*); rewrite, consider others’ points of view (HFC p. 8).

F

–facing

northwest-facing (um) (DSC)
ocean-facing (um) (DSC)

Fahrenheit (use °F)

farm

farmhouse (n) (MW)
farmland (n) (MW)
farm lane (n) (DSC)

farther, further *Farther* refers to physical distance, *further* to an extension of time or quantity (HFC p. 8).

The farther he walked along Cumberland Island’s shore, the further his mind strayed from his problems.

fax (MW) (n, v), *not* FAX, because it is short for *facsimile* and is not an acronym.

federal, including federal government (MW) (lowercase). *But* Federal soldier, Federal forces, and Federal fort when writing about the Civil War (HFC p. 9).

Federalist Federalist Party; Federalist Papers (HFC p. 9).

fee-simple (um) (DSC); fee simple (n) (MW)

feedback (n) (MW)

fence

fenceline (n) (DSC)
fencepost (n) (DSC)

fewer, less *Fewer* refers to number and individual items, *less* to quantity and bulk (HFC p. 9).

Fewer birds came to the feeder because Yuriko put out less food.

fiber optics (n) (MW); fiber-optic (um) (MW)

field

field hand (n) (MW)
 field house (n) (MW)
 field trip (n) (MW)
 fieldwork (n) (MW)
 fieldworker (n) (MW)

–field

ball field (n) (DSC)
 coalfield (n) (MW)
 goldfield (n) (MW)
 grain field (n)
 leach field (n)
 oil field (n)
 sports field (n)
 spray field (n)

fire

firefighter (n) (MW)
 firefighting (n) (MW)
 firehouse (n) (MW)
 firepit (n) (HFC)
 fireproof (adj, v) (MW)
 fire ring (n) (DSC)
 firewood (n) (MW)

first

firsthand (adv, adj) (MW)
 first-come, first-served (DSC)

fish (singular and plural) *also* fishes, particularly for different species; author's preference.

–fish

sport fish (n, v) (MW)
 surf-fish (v) (DSC)

fixed-wing (um)**flash flood** (n, v) (MW)

flash flooding (n) (DSC)

flood

flood-affected (adj)
 flood control (n) (DSC)
 floodgate (n) (MW)
 flood-impacted (adj)

floodplain (n) (MW)
 flood-prone (adj) (DSC)
 flood-proof (adj) (DSC)
 flood-proofing (n) (DSC)
 flood stage (n) (DSC); flood-stage (adj)
 floodwater(s) (n) (MW)
 floodway (n) (MW)

–flow

debris flow (n)
 lava flow (n) (DSC)
 mudflow (n) (MW)
 river flow (n)
 spring flow (n)
 streamflow (n) (DSC), stream-flow (um)
 water flow (n)

flowchart (n) (MW)**–fold** (tenfold; 25-fold)**folk**

folklife (n) (MW)
 folklike (adj) (MW)
 folklore (n) (MW)
 folksinger (n) (MW)
 folk song (n) (MW)
 folkway (n) (MW)

follow-up* (n, um) (MW)**food service** (um, n) (DSC)**foot**

footbridge (n) (MW)
 footpath (n) (MW)
 footprint (n) (MW)
 foot trail (n) (DSC)

fore

foredune (n)
 forefront (n) (MW)
 forego (v) (to precede) (MW), *but* forgo (to do without) (MW)
 foreword (section of a book) (n) (MW)

Forest Service, use *USDA Forest Service* at the first occurrence; thereafter, *Forest Service* is acceptable. Distinguish the federal agency from state agencies.

forestland (n) (MW) as a descriptive term, but *forest land* for land designated as a national forest (DSC)

–form

free-form (adj) (MW)

landform (n) (MW)

life-form (n) (MW)

fort Capitalize and spell out (*not* Ft.) as part of a proper name.

Fort Collins, Colorado

Fort Lewis College

Fort Sumter National Monument

four-wheel-drive Always spell out.

free

free-form (adj) (MW)

freelance (n, adv, v) (MW)

free-range (adj) (MW)

freestanding (adj) (MW)

freeze-up* (n) (DSC)

freshwater (n, um) (MW)

–front

bayfront (n) (DSC)

beachfront (n) (MW)

forefront (n) (MW)

lakefront (n) (MW)

oceanfront (n) (MW)

riverfront (n) (MW)

seafont (n) (MW)

shorefront (n) (MW)

frontcountry avoid; use *developed area*.

full-time (um, adv) (MW)

fund

fund-raiser (n) (MW)

fund-raising (adj, n) (MW)

furbearer (n) (MW)

FY Abbreviation for *fiscal year*; use a space between *FY* and year (e.g., FY 2006).

G

gas line (n) (DSC)

gatehouse (n) (MW)

geo

geoarchaeology (n)

geobotany (n)

geo-reference (H)

Giardia lamblia The organism; may be abbreviated *G. lamblia*; *giardiasis* is the illness caused by the organism (HFC).

Gila monster (n) (MW)

gill net (n) (MW), gillnet (v) (MW), gill-net (um), gillnetter (n) (MW) **GIS** (n, adj) Spell out on first occurrence, e.g., *geographic information system(s)*.

glass

glassmaking (n) (MW)

glassworks (n) (MW)

goldfield (n) (MW)

government

federal government

U.S. government

grain

grain field (n)

grain-size (um), grain size (n)

–grass

beach grass (n) (MW)

sea grass (n) (MW)

short-grass (um) (MW)

tallgrass (adj) (MW)

turfgrass (n) (MW)

grassroots (adj) (MW); grass roots (n) (MW)

grassland (n) (MW)

ground

ground cover (n) (MW), ground-cover (um)

ground level (n), ground-level (um)

ground-penetrating (um)
ground truth (v), ground-truthed (um) (avoid; use *field-checked* or the like)
groundwater (n, um) (MW)
groundwork (n) (MW)

–ground

aboveground (adj, adv) (MW)
battleground (n) (MW)
belowground (adj, adv) (MW)
underground (adj, n) (MW)

guard

guardhouse (n) (MW)
guardrail (n) (MW)
guardwall (n) (DSC)

–guard

cattle guard (n) (MW)
lifeguard (n) (MW)

guesthouse (n) (MW)

guide

guiderail (n) (MW)
guidewall (n) (DSC)

guide dogs *Service animals* is the preferred designation for guide dogs and signal dogs.

Except for visitors with service animals, pets are not allowed in the campground. (HFC 9 10)

guided hikes *See* self-guiding trail.

H

handheld (n, um) (MW)

handicap

access (change to *universal access*, but *handicap parking* is acceptable [HFC])
people (change to *visitors [or people] with disabilities*) (HFC)
ramp (change to *wheelchair ramp*) (HFC)

hands-on (um) (MW)

hang glide (v) (MW), hang gliding (n) (MW), hang glider (n) (MW)

hard hat (n) (MW), *but* hard-hat (um) (DSC)

hard rock (music, n) (MW), *but* hardrock (mining, geology; um) (DSC)

Harpers Ferry Center *not* the Harper's Ferry Center (neither article nor apostrophe) (HFC)

Hawaiian words Do not add 's (apostrophe and s) to Hawaiian words to form possessives; causes confusion with native-language diacritical marks (HFC p. 10).

The island of Pele *not* Pele's island.

headlamp (n) (MW)

hearing-impaired (adj); hearing impaired (n) (DSC)

heavy-duty (um) (MW)

high

highcountry (adj, n) (HFC)
high-density (adj)
high-energy (adj) (MW)
high-grade (adj) (MW)
high-level (adj) (MW)
high-pressure (adj) (MW)
high-quality (um) (DSC)
high-use (um)
high-water (adj) (MW)

hillside (n) (MW)

historic/historical (CMS 5.202; Gregg p. 281; H) *The Chicago Manual of Style* states, "*Historic* refers to what is momentous in history; *historical* refers simply to anything that occurred in the past." In addition, use *historic* in reference to specific (authentic) buildings, sites, or artifacts associated with a historic event (H).

July 4, 1776, is a historic day for the United States of America.

The historical novel takes place in the 1800s.

The old trees that had covered the earthworks since the Civil War were falling over and damaging the historic ruins as their roots lifted out of the earth.

homesite (n) (MW)

hookup (n) (MW), *but* hook up (v) (MW)

–house

bathhouse (n) (MW)
blockhouse (n) (MW)
boarding house (n) (MW)
boathouse (n) (MW)
chickenhouse (n) (DSC)
clearinghouse (n) (MW)
courthouse (n) (MW)
doghouse (n) (MW)
farmhouse (n) (MW)
field house (n) (MW)
firehouse (n) (MW)
gatehouse (n) (MW)
guardhouse (n) (MW)
guesthouse (n) (MW)
henhouse (n) (MW)
icehouse (n) (MW)
powerhouse (n) (MW)
pump house (n)
ranch house (n) (MW)
rest house (n) (MW)
rooming house (n) (MW)
slaughterhouse (n) (MW)
springhouse (n) (MW)
storehouse (n) (MW)
sweat house (n)
warehouse (n) (MW)
washhouse (n) (MW)

human

human-made (adj) (consider using *artificial* or *manufactured*) (DSC)

hunter-gatherer (adj, n) (MW)

I

ice

ice fishing (n) (DSC)
icehouse (n) (MW)
ice-skate (v) (MW), ice-skater (n) (MW), ice-skating (um) (DSC)

ice age(s) *but* Wisconsin Ice Age; Ice Age Reserve (HFC)

ice cap (n) (MW)

ice field (n) (MW)

impacts on (H) *not* impacts to.

–impaired

hearing-impaired (n, um, pa)
sight-impaired (n, um, pa)
visually impaired (n, um, pa)

–in

check-in* (n) (MW)
pull in (v) (MW)
put-in* (n, um) (DSC)
turn-in* (n) (MW)

in-depth (adj) (MW)

indexes *not* indices (n) (MW)

Indian *See* American Indian (HFC).

in hand (prepositional phrase)

inland (adj, adv, n) (MW)

inland-camping (um)
inland-relocation (um)

in-line skating *not* Rollerblading, to avoid use of trademark (DSC)

inner

inner tubers (n) (DSC)
inner tubing (n) (DSC)

in situ *not* italicized (um, adv) (MW)

instream (adj) (DSC)

inter

interagency (adj) (MW)
interannual (adj) (MW)
intercommunity (adj) (MW)
interdependence (n) (MW)

insure *See* ensure.

Internet (n) (MW)

interpretive *not* interpretative

intra

intragovernmental (adj) (H)
intra-office (adj, adv) (H)

intranet not a formal name *but* Natural Resources Intranet (formal name)

iron

iron making (adj, n) (DSC)

iron-stained (um)

ironworks (n) *but* Saugus Iron Works National Historic Site

J

jawbone (n, v) (MW)

Jean Lafitte (n) (MW)

jet ski avoid, as it is a trademark; consider using *personal watercraft*.

Joshua tree *but* Joshua Tree National Park (HFC)

judgment (n) (MW)

K

knee-high (um) (MW)

L

labeled *not* labelled (v) (MW)

lake

lakefront (n) (MW)

lakeshore (n) (MW)

lakeside (n) (MW)

land

land classification (um) (DSC)

landfill (n) (MW)

landform (n) (MW)

land-management (um), land-managing (um) (DSC)

landmass (n) (MW)

landowner (n) (MW), landownership (n) (MW)

land protection (um) (DSC)

landscape (n) (MW)

land type (n, adj) (geologic usage)

land use (n, um) (DSC)

landward (adj, adv) (MW)

–land

cropland (n) (MW)

farmland (n) (MW)

forestland (n) (MW) (see p. 64)

grassland (n) (MW)

marshland (n) (MW)

parkland (n) (MW) (as a descriptive term, but *park land* for land designated as a park)

pastureland (n) (MW)

ranch land (n)

rangeland (n) (MW)

shrubland (n) (MW)

swampland (n) (MW)

wetland (n) (MW)

wildland (n) (MW)

large

large-scale (adj)

large-skulled (adj)

–latitude

high latitudes (n); high-latitude (um)

low latitudes (n); low-latitude (um)

midlatitudes (n); midlatitude (adj) (MW)

33° north latitude (lowercase)

lava flow (n)

law enforcement (n) (DSC)

lay

layoff* (n) (MW)

layout* (n) (MW)

layover* (n) (MW)

layup* (n) (MW)

lay/lie (CMS 5.202) *Lay* means “to place” and requires an object to complete its meaning. *Lie* means “to rest” or “to recline” and does not take an object. *Lie* refers to a person or thing as either assuming or being in a reclining position.

The bed most extensively used for building stone is the flaggy limestone that lies [rests] between the Rader and Lamar limestone members of the Bell Canyon Formation southeast of the mouth of McKittrick Canyon.

The Gregg Reference Manual suggests a test: Substitute *place* or the appropriate form of the word in question. If the substitution fits, the corresponding form of *lay* (i.e., *laid* or *laying*) is correct.

The dog will (lie or lay?) down now. (You would not say “The dog will place down now,” so using *lie* is correct here.)

leach field (n) (DSC)

lean-to (n, adj) (MW)

leaseback (n) (MW)

lee

lee shore (n) (MW)

lee side (n)

leeward (adj, n) (MW)

–less Always insert a hyphen between a root word that ends in *ll* and *less* (e.g., *shell-less*). Generally insert a hyphen between a root word and *less*. Some exceptions are:

bottomless (adj) (MW)

faultless (adj) (MW)

seasonless (adj) (MW)

letup* (n) (MW)

leveling (v) (MW), *not* levelling

lidar (n) (MW), not an acronym

life

life cycle (n) (MW)

life-form (n) (MW)

lifeguard (n) (MW)

lifelike (adj) (MW)

life-sized (adj) (MW)

life span (n) (MW)

lifestyle (n) (MW)

lifeway (n) (MW)

–life

folklife (n) (MW)

plant life (n)

wildlife (n) (MW)

lifesaving station One word unless proper name or park usage requires otherwise.

By the 1890s, lifesaving stations were located every 3.5 miles (5.6 km) along the New Jersey coast.

The Old Harbor Life-Saving Station has been at Cape Cod since 1898. (HFC)

light

light-rail (n) (MW)

light use (n) (DSC)

lightning-caused (um)

–like Always insert a hyphen between a root word that ends in *ll* and *like* (e.g., *bell-like*). For simple one and two-syllable words that do not end in *l* no hyphen is necessary. Examples are:

businesslike (n) (MW)

lifelike (n) (MW)

–line

centerline (n) (MW)

coastline (n) (MW)

crestline (n) (DSC)

electrical line (n) (DSC)

fenceline (n) (DSC)

gas line (n) (DSC)

pipeline (n) (MW)

powerline (n) (DSC)

rail line (n) (DSC)

ridgeline (n) (MW)

sewerline (DSC)

shoreline (n) (MW)

sight line (n) (MW)

telephone line (n) (DSC)

timberline (n) (MW; avoid), *use* tree line (n) (MW)

transmission line (n) (DSC)

tree line (n) (MW)

waterline (n) (MW)

line item (n) (MW), *line-item* (um) (MW)

linkage Use *link* or *links* instead.

linkup* (n)

live

live-capture (v, um)

livestock *but* pack animals (n) (HFC)

live trap (n) (MW), *livetrapped* (v) (MW)

long

long-distance (adj, adv), long distance (n) (MW)

long-lived (adj) (MW)

long-range (adj) (MW)
long term (n) (MW), long-term (adj) (MW)

low

low-cost (um), low cost (n)
low-energy (um)
low-impact (um), low impact (n)

lower 48 states

loyalist *See* American Revolution affiliations (HFC).

M

macroinvertebrate (n)

makeup* (adj, n) (MW)

–making

brick making (n) (H)
decision making (n); decision-making (um) (DSC)
glassmaking (n) (MW)
iron making (adj, n) (DSC)
papermaking (n) (MW)
policymaking (H)
steelmaking (n) (MW)

management

management planning (adj, n) (DSC)
management zoning (um) (DSC)

man-made Avoid; use *manufactured*, *artificial*, or *human-made* instead (DSC).

marsh-building (um) (DSC)

mass transit (n) (DSC)

Master

Master of Arts (MA) (n) (CMS 15.21)
Master of Science (MS) (n) (CMS 15.21)
master's (n) (MW)
master's degree (n) (MW)

master planning (n) (DSC)

meatpacking (n) (MW, DSC)

memorandums *not* memoranda

micro

microenvironmental (adj) (MW)

microhabitat (n) (MW)
microorganism (n) (MW)

mid

midafternoon (adj, n)
midair (n, adj) (MW)
mid-Atlantic (adj)
mid-August (adj, n) (DSC)
midbasin (adj)
midblock (adj) (DSC)
midcoast (adj)
midday (adj, n) (MW)
midlatitudes (n); midlatitude (um) (MW)
midlife (n) (MW)
midmorning (n, adj)
mid-ocean (adj) (MW)
midstream (n) (MW)
midsummer (n) (MW)
midweek (n) (MW)
midwestern (adj)
midwinter (n) (MW)
midyear (n) (MW)
mid-19th century (n) (DSC)

mini

minibus (n) (MW)
minivan (n) (MW)

modeled (v) (MW), *not* modelled

moderate-sized (um)

more than/over (H) Use *more than*, *fewer than*, or *less than* for generic quantities.

More than 1,100 men died in the battle. *not*
Over 1,100 men died in the battle.

We encountered winds of more than 50 miles
(80 km) per hour as we flew over Snoqualmie
Pass.

Use *over* for a position (i.e., over and under). Also, according to *The Gregg Reference Manual* (§1101), *over* is preferred when used before years.

Brown pelicans flew over Anacapa Island.

Trailers more than 30 feet (9 m) long are prohibited on Corkscrew Pass.

My parents, who are over 70, hike at least three days per week.

Mount *not* Mt. Capitalize and spell out when part of a proper name.

mountain ash (n) (MW)

mountain lion *See* cougar (HFC).

mountainside (n) (MW)

mountaintop (n) (MW)

mud

mudflat(s) (n, um) (MW)

mudflow (n) (MW)

mud pot (n) (AGI)

mudslide (n) (AGI)

mudstone (n) (AGI)

multi

multiaccess (adj) (DSC)

multiagency (adj) (MW)

multiday (adj) (MW)

multidimensional (adj) (MW)

multifaceted (adj) (MW)

multiparameter (adj) (MW)

multiplay (adj)

multipurpose (adj) (MW)

multiregional (adj) (MW)

multiresource (adj)

multiscale (adj)

multisource (adj)

multistage (adj)

multistate (adj)

multistory (adj) (MW)

multiuse (adj) (MW)

multiyear (adj) (MW)

multiple use (um) (DSC)

muskox (n, singular), muskoxen (plural)

N

nation *but* the Nation's Capital (HFC p. 13)

national

national park, *but* Yellowstone National Park

National Park System

National Wilderness Preservation System

National Park Service (capitalize) or *Park Service* for variety unless it could be confused for a state or county entity; NPS (um).

National Park System (capitalize, HFC p. 14) Spell out; does not have an acronym.

on the **national register**, not in the **national register**

national seashore *but* Fire Island National Seashore

Native American Avoid unless requested by park. *See* American Indian (HFC p. 14).

natural resource (um) (MW)

near

nearshore (adj) (MW)

nearside (adj) (MW)

nearsighted (adj) (MW)

–nesting

bird nesting (n), bird-nesting (um)

turtle nesting (n), turtle-nesting (um)

no-action (um) (DSC)

non

nonactivity (n)

noncampers (n)

noncarrion (n)

noncombustibles (n) (MW)

nondestructive (adj) (MW)

nonessential (adj)

nonexistent (adj) (MW)

nonfederal (adj) (MW)

nonflowering (adj)

nonfoam (adj)

nonforest (adj)

nonfunded (a dj)

nongame (adj) (MW)

nongovernment (adj) (MW)

nonhazardous (adj) (MW)

nonhunted (adj)

nonlocal (adj) (MW)

nonmarine (adj)

nonmigratory (adj) (MW)

nonmotorized (adj) (MW)
 nonnative (adj) (MW)
 nonnormative (adj) (MW)
 nonoverlapping (adj) (MW)
 nonoxidizing (adj) (DSC)
 nonplastic (adj) (MW)
 nonpoint (adj) (MW)
 nonporous (adj) (MW)
 nonprofit (n, adj) (MW)
 nonpublic (adj) (MW)
 nonrecyclable (adj) (MW)
 nonrenewable (adj) (MW)
 nonrespondents (adj) (MW)
 nonspecific (adj) (MW)
 nontechnical (adj) (MW)
 nontoxic (adj) (MW)
 nonunionized (adj) (MW)
 nonworker (adj) (MW)

North (the) *See* Civil War (HFC p. 14).

north, northern Lowercase compass directions; minimize use of capital letters except for specific regions (or popular place-names). Acadia is northeast of Boston; California's North Coast (HFC p. 14).

northern winter range (n)

NPS is the acronym (and unit modifier) for National Park Service, *not* National Park System; *NPS* is not a noun.

NPS-operated (um)

O

occur Most species live in or inhabit a place; they don't "occur."

ocean

ocean-facing (um) (DSC)
 oceanfront (n) (MW)
 oceangoing (adj) (MW)
 oceanside (n) (DSC)

off-

off-ramp (n) (MW)
 off-road (adj) (MW)
 off-season (n) (MW)
 offsetting (v) (MW)

offshore (adj, adv) (MW)
 off-site (adj, adv) (MW)
 off-street (adj, adv)
 off-trail (adj, adv)

–off

break off (v) (MW)
 drop-off* (n) (MW)
 layoff* (n) (MW)
 pull off (v) (MW)
 pullout* (n) (MW)
 runoff* (n) (MW)
 shutoff* (n) (MW)
 takeoff* (n) (MW)
 turnoff* (n) (MW)

oil field (n) (MW) (DSC)

old growth (n) (MW), old-growth (um) (MW)

on

ongoing (adj) (MW)
 online (adj) (MW)
 on-ramp (n) (MW)
 onshore (adj) (MW)
 on-site (adj, adv) (MW)

one another Use for more than two people or things; use *each other* for two people or things.

one-shot (um) (MW)

one-way (um) (MW); one way (n) (HFC)

never 1-way

Cedar River Gorge is a one-way loop road that winds through old-growth forest.

We found more than one way to reach the campground.

open

open-ended (adj) (MW)
 open-pit (um)
 open space (n) (DSC)

otter singular and plural; *also* otters (MW)

out

outcompete (v) (MW)
 outperform (v) (MW)

–out

breakout* (adj, n) (MW)
checkout* (n) (MW)
layout* (n) (MW)
printout* (n) (MW)
pullout* (n) (MW)
pump out (v)
putout* (n) (MW)
shutout* (n) (MW)
takeout* (n) (MW); take-out* (of food; adj) (MW)
turnout* (n) (MW)
workout* (n) (MW)

over

overbrowse (v) (MW), overbrowsing (n)
overcollection (n) (DSC)
overemphasis (n) (MW)
overfish (v) (MW)
overflight (n)
overpopulate (v) (MW)
oversize (adj) (MW)
oversnow (adj) (H)
overuse (adj, n) (MW)
overwash (n, um) (AGI)
overwinter (v, adj), overwintering (n) (MW)

–over

layover* (n) (MW)
pullover* (n) (MW)
takeover* (n) (MW)

P

pack animals *but* livestock (HFC p. 14)

pack rat (n) (MW)

panther *See* cougar (HFC).

paperboard (n) (MW)

park *but* Olympic National Park (HFC p. 14)

park

park-based (um)
parkland (as a descriptive term, but *park land* for land belonging to a park) (DSC)
park-related (pa, um) (H)
parkwide (adj) (DSC)

part-time (um, adv) (MW)

passageway (n) (MW)

pastureland (n) (MW)

patriot *See* American Revolution affiliations (HFC p. 15).

phenomenon (singular); phenomena (plural) (n) (MW)

photocopy (n, v) (MW) Preferred to *Xerox*, which is a trademark.

pickup* (n, um) (MW)

piñon or pinyon (*not* piñyon)

pipeline (n) (MW)

plain flat area, prairie (n) (MW)

–plane

airplane (n) (MW)
bedding plane (n); bedding-plane (um) (AGI)

plant life (n) (DSC)

p.m. (HFC p. 20)

policy

policyholder (n) (MW)
policymaker (n), policymaking (H)

ponderosa pine (lowercase) (n) (MW)

post

postcalving (adj)
postcard (adj, n) (MW)
postconstruction (um) (DSC)

postcontact (n) (DSC)
postdepositional (adj) (MW)
postfire (adj)
postharvest (adj) (MW)
posthunt (adj)
postrelease (adj)
postresolution (adj)
postseason (adj, n)
postvisit (adj) (DSC)

pothunter (n) (MW)

potsherd *not* potshard (n) (MW)

power

- powerboat (n) (MW)
- powerboating (adj, n) (MW)
- powerhouse (n) (MW)
- powerline (n) (DSC)
- power plant (n) (MW)

–power

- steampower (n)
- waterpower (n) (MW)
- windpower (n)

pre

- prearrange (v) (MW)
- prearrival (n)
- prebreeding (adj)
- precalving (n)
- preconditioned (n) (MW)
- preconstruction (n) (MW)
- precontact (adj) (MW)
- predate (v) (MW)
- predawn (adj) (MW)
- predesign (adj) (DSC)
- predetermine (v)
- predisturbance (n) (MW)
- predominate (v) (MW)
- preharvest (n) (MW)
- prehunt (n)
- premanipulation (n)
- premeasured (adj) (MW)
- prerelease (adj) (MW)
- preseason (n) (MW)
- previsit (n) (DSC)

president *but* President Bush (HFC)

- presidency
- presidential, *but* Presidential Medal of Freedom

preventive (adj) *not* preventative

prickly pear cactus (n)

principal main or most important (adj, n) (MW)

principle fundamental rule (n only), principled (adj) (MW)

printout (n) (MW)

pronghorn Not a true antelope; clarify at first mention with *often called antelope* (HFC p. 16).

–proof

- bear-proof (um) (DSC)
- foolproof (adj) (MW)
- rainproof (adj) (MW)
- vandal-proof (um) (DSC)
- waterproof (adj) (MW)

public

- public contact (n) (DSC)
- public use (n) (DSC)

pull

- pull in (v) | pull-in (n)
- pullout* (n) (MW)
- pullover* (n, adj) (MW)

pump

- pump house (n)
- pump out (v)

put

- put-in* (n) (DSC)
- putout* (n) (MW)

R

radio

- radioactive (adj)
- radiocarbon (n) (MW), radiocarbon dating (n), radiocarbon-date (v) (MW)
- radio collar (n) (MW), radio-collar (v) (MW), radio collaring (n), radio-collared (adj)
- radio location (n), radio-locate (v), radio-located (um)
- radio mark(ing) (n), radio-mark (v), radio-marked (adj, um), radio-marking (adj, um)
- radiotelemetry (n), radiotelemetric (adj) (MW)
- radio tracking (n), radio-track (v), radio-tracked (adj, um), radio-tracking (adj, um)
- radio transmitter (n)

rail

rail bed (n) (DSC)
railcar (n) (MW)
railhead (n) (MW)
rail line (n) (DSC)
railroad (n, v) (MW)
rail worker (n) (DSC)
rail yard (n)

rain

raindrop (n) (MW)
rainfall (n) (MW)
rain forest (n) (MW), rain-forest (adj)
rainmaker (n) (MW)
rain shadow (n) (MW)
rainwater (n) (MW)

ranch

ranch hand (n)
ranch house (n) (MW)
ranch land (n)

rangeland (n) (MW)

ranger *but* Ranger Baker (HFC p. 16)

rapid transit (n) (MW)

re

readjust (v) (MW)
reboard (v) (MW)
recolonize (v) (MW)
re-create (to create again) (v) (MW)
reengineer (v) (MW)
reestablish (v) (MW)
reevalute (v) (MW)
reexamine (v) (MW)
reinstall (v) (MW)
reintroduce (v) (MW)
renumber (v) (MW)
rephotograph (v) (MW)
re-present (to present again) (v) (DSC)
reroute (v) (MW)
resample (v) (MW)
resight (v) (MW)
resurvey (v) (MW)
revegetate (v), revegetation (n)

rebel *See* Civil War (HFC p. 16).

recordkeeping (n) (DSC)

recreate (v) to take recreation; **re-create** (to create again) (v) (MW)

recreation/recreational Use *recreation* when referring to facilities, as a recreation facility, resource, area, potential, trail. Use *recreational* when referring to the experience or to an activity that is a form of recreation (e.g., recreational program, opportunity, driving, visits) (DSC).

recreational vehicle (n) (MW)

resource management (um), *not* resources management

rest

rest house (n) (MW)
restroom (n) (MW)

Revolutionary War (HFC).

ridge

ridgeline (n) (MW)
ridgetop (n) (MW)

Rio Grande *not* Rio Grande River

river

riverbank (n) (MW)
riverfront (n) (MW)
river-runner (n) (DSC)
river-running (n) (DSC)
riverside (n) (MW)
riverway (n)

roadway(s) (n) Avoid; use *road(s)*.

road

roadblock (n) (MW)
road map (n) (MW)
roadside (n) (MW)
road trip (n) (MW)

–road

off-road (adj) (MW)

rock

rock climb (v) (MW), rock climbing (n) (MW),
rock-climbing (um)
rockfall (n) (MW)
rock shelter (n) (DSC)
rockslide (n) (DSC)

–room

backroom (n) (MW)
break room (n)
restroom (n) (MW)

rooming house (n) (MW)

round-trip (n, um) (MW)

ruin Avoid unless included in proper name;
use *dwelling*, *site*, *structure*. See abandoned
(HFC p. 17).

Ancestral Puebloan people built these dwellings
more than 1,000 years ago.
The 2.5-mile (4-km) trail to White House Ruin is
on the canyon's South Rim Drive.

rule

rule making (n), rule-making (um) (DSC)
Rule Making Act (capitalize)

run

runaround* (n) (MW)
runaway* (adj) (MW)
rundown* (n) (MW), run-down (adj, pa) (MW)
runoff* (n) (MW)

rush hour (n) (MW), rush-hour (adj)

RV(s) (n) (MW), recreational vehicle(s)

S

safeguard (n, v) (MW)

sail

sailboard (n) (MW)
sailboat, sailboaters (n) (MW)

saint Abbreviate as *St.* (not *Saint*) when
part of a proper name.

St. Louis, Missouri
Wrangell–St. Elias National Park

salt

salt lake (n) (MW)
salt marsh (n) (MW), salt-marsh (um)
saltless (adj) (MW)
saltwater (adj) (MW), salt water (n) (MW)

sand

sandbag (n, v) (MW)
sandbar (n) (MW)
sandblast (n, v) (MW)
sand-blind (adj) (MW)
sand dollar (n) (MW)
sand dune (n) (AGI)
sand flea (n) (MW)
sand fly (n) (MW)
sandfly fever (n) (MW)
sandglass (n) (MW)
sand hill (ridge) (AGI)
sandhills (region of sand hills) (AGI)
sand sea (n) (AGI)
sand sheet (n) (AGI)
sand spit (n) (AGI)
sandstone (n) (MW)
sand trap (n) (MW)

schoolchild(ren) (n) (MW)

sea

seabird (n) (MW)
seafloor (n) (MW)
seafront (n) (MW)
sea grass (n) (MW)
sea level (n) (MW), sea-level (adj)
sea life (n)
seascape (n)
seashore (n) (MW)
seaside (adj, n) (MW)
sea star (n) (MW)
seawall (n) (MW)
seawater (adj, n) (MW)

seasonal (adj, n) Acceptable as noun refer-
ring to seasonal park employees (HFC).

seasonless (adj) (MW)

seasons Lowercase the calendar seasons
fall, *winter*, *spring*, *summer*.

–sector

private sector (n), private-sector (adj)
public sector (n), public-sector (adj)

self-guiding trail *not* self-guided. Avoid writing *nature* (most trails are nature trails in some way) or *interpretive* trail (visitors may expect a ranger-led tour) (HFC p. 17).

semi

semiannual (adj) (MW)
semiarid (adj) (MW)
semihard (adj)
seminatural (adj) (MW)
semiprimitive (adj) (DSC)
semitechnical (adj)

senior citizen (n, um) (MW)

Service-wide (across or throughout the National Park Service) (H).

The director issued a Service-wide announcement that all NPS employees will receive a 50% raise.

set

set-aside* (n) (MW)
setback* (n) (MW)
set-in* (adj, n) (MW)
setoff* (n) (MW)
setup* (n) (MW)

sewage treatment (um)

sewerline (n)

Shenandoah Valley *but* the valley

shore

shorefront (n) (MW)
shoreline (n) (MW)

–shore

bayshore (n) (DSC)
lakeshore (n) (MW)
nearshore (adj) (MW)
offshore (adj, adv) (MW)
onshore (adj, adv) (MW)
seashore (n) (MW)

short

shortcut (n) (MW)
short-necked (adj)
short-term (adj) (MW), short term (n) (MW)

shrubland (n) (MW)

shut

shutdown* (n) (MW)
shutoff* (n) (DSC)

shuttle bus (n, um) *not* shuttlebus (one word). Be consistent with park signs (HFC p. 18).

–side

bayside (adj, prep) (MW)
beachside (adj) (MW)
eastside (um) (DSC)
hillside (n) (MW)
lakeside (n) (MW)
mountainside (n) (MW)
northside (um) (DSC)
oceanside (n) (DSC)
riverside (n) (MW)
roadside (adj, n) (MW)
seaside (adj, n) (MW)
shoreside (adj) (MW)
soundside (n, um) (side of the sound)
southside (um) (DSC)
streamside (n) (MW)
topside (adj, adv, n) (MW)
trailside (adj) (MW)
waterside (adj, n) (MW)
westside (um) (DSC)

sight

sight-impaired (pa, n, um) *not* visually impaired;
sight-impaired visitors (DSC)
sight line (n) (MW)

sightsee

sightseeing (adj, n) (DSC)
sightseer (n) (MW)

signage Use *sign* or *signs* instead.

signboard (n) (MW)

–site

- campsite (n) (MW)
- homesite (n) (MW)
- off-site (adj, adv) (MW)
- on-site (adj, adv) (MW)

site-specific (um)

slack water (n) (MW) *but* slackwater (um)
(HFC p. 18)

snow

- snowpack (n) (MW)
- snow-track (v), snow tracking (n), snow-tracking
(adj, um)

socioeconomic (adj) (MW)

solar system (n) (MW) not capitalized

sourcebook (n) (MW)

South (the) *See* Civil War (HFC)

south, southern Lowercase compass directions; minimize use of capital letters except for specific regions; *southern Appalachians* (HFC p. 19).

–span

- life span (n) (MW)
- time span (n)

special

- special use (n) (MW), special-use (um)
- special interest (n), special-interest (um)

spin-off* (n) (MW)**sport**

- sportfishing (n) (MW)
- sport hunting (n) (DSC); use *hunting*

sports field (n)**spring**

- springhouse (n) (MW)
- springwater (n) (MW)

staff (n) (MW) Singular as a collective noun or plural if individuals are to be emphasized (see *Words Into Type*, p. 354)

starfish (n) (MW) Use *sea star*.

start-up* (n, um)

state (adj, n) state government, state regulations (HFC p. 19)

state-of-the-art (adj) (MW), state of the art (n) (MW)

steam

- steampower (n)
- steam-powered (adj) (DSC)

steelworker (n) (MW)**stockpile** (n, v) (MW)**stone**

- stone wall (n) (MW)
- stonewall (v) (MW)

stopover* (adj, n) (MW)**storehouse** (n) (MW)**storm**

- storm drain (n) (MW)
- stormwater (n, um) (DSC)
- storm window (n) (MW)

story

- storyboard (n) (MW)
- storybook (n) (MW)
- storytelling (n) (MW)

stream

- streambank (n, um) (MW)
- streambed (n) (MW)
- streamflow (n) (DSC), stream-flow (um)
- streamside (n) (MW)
- stream water (n), stream-water (um)

–street

- off-street (adj)
- on-street (adj)

strychnine-poisoned (adj)**study area** (n) (DSC)

sub

subagreement (n) (DSC)
subcanopy (n)
subcategory (n) (MW)
subcommittee (n) (MW)
subcommunity (n) (MW)
subcontractor (n, v) (MW)
subcursorial (adj)
subfossil (adj, n) (MW)
subgroups (n) (MW)
subsample (n, v) (MW)
subset (n) (MW)
substructure (n) (MW)
subtheme (n) (MW)
subtotal (adj, n) (MW)
subtropical (adj, n) (MW)
subtype (n) (MW)
subzone (n) (MW)

surf-fish (v) (DSC)

surface water (n) (MW)

swampland (n) (MW)

T

take

takeoff* (n) (MW)
takeout* (n) (MW), take-out (adj), of food (MW)
takeover* (n) (MW)

task force (n) (MW)

teamwork (n) (MW)

telephone line (n)

that/which (DSC, p. vi) Use *that* for clauses that restrict the meaning of a sentence; use *which* for clauses that provide additional information and are not necessary to understand the sentence. In the following examples, the first sentence means that only bears eating out of garbage cans will be removed (thus restrictive). The second sentence means that all bears will be removed and, incidentally, bears eat from garbage cans (see CMS 5.202).

Bears that eat out of garbage cans will be removed from the park.

Bears, which eat garbage out of garbage cans, will be removed from the park.

through

through-hiker (n) (DSC)
through-road (n) (DSC)
through-route (n) (DSC)
through-traffic (n) (DSC)
through-traveler (n) (DSC)

–through

breakthrough* (n) (MW)
drive-through* (adj, n) (MW)

thunder

thundercloud (n) (MW)
thunderhead (n) (MW)
thundershower (n) (MW)
thunderstorm (n) (MW)

tidal

tidal flat (n) (AGI)
tidal inlet (n) (AGI)
tidal marsh (n) (AGI)
tidal outlet (n); use *tidal inlet* (AGI)
tidal pool (n) (AGI), use *tide pool*
tidal river (n) (AGI)
tidal scour (n) (AGI)
tidal swamp (n) (AGI)
tidal wave (n); use *storm surge* or *tsunami* (AGI)

timberline Avoid; use *tree line* (HFC).

time

timeframe (n)
timescale (n) (MW)
time span (n)

–time

full-time (adj, adv), full time (n) (MW)
part-time (adj, adv) (MW)

–to (n) (MW)

lean-to (n) (MW)

topside (n) (MW)

Tory See American Revolution affiliations (HFC).

trade-off* (n) (MW)

trail

trailhead (n) (MW)

trailside (adj) (MW)

–trail

foot trail (n)

transit-dependent (n, um, pa) (DSC)

transmission line (n) (DSC)

travel time (n)

traveling (n) (MW)

tree

tree line (n) (MW) (use instead of *timberline*)

tree ring (n) (MW), tree-ring (um)

turflike (adj)

turn

turnabout* (n) (MW)

turnaround* (n) (MW)

turnoff* (n) (MW)

turnout* (n) (MW)

turnover* (n) (MW)

turn of the century Ambiguous; avoid unless meaning is absolutely clear (HFC p. 20).

U

ultraviolet (adj, n) (MW)

under

underuse (n)

underused (adj) (MW)

underwater (adj) (MW)

under way (adv) (MW), underway (for vessels)

underground *but* Underground Railroad (HFC p. 20)

Union *See* Civil War (HFC p. 20).

unique Avoid; use only if one-of-a-kind. Substitute *distinctive*, *special*, *particular*.

United States, U.S. United States, a noun (spell out). U.S., an adjective (no space) (HFC).

Lyndon B. Johnson was elected to the U.S. Senate in 1948.

The United States is part of the North American continent.

up

up-gradient (adj) (MW)

upriver (adj, adv) (MW)

upstream (adj, adv) (MW)

upvalley (adj, adv)

–up

backup* (adj, n) (MW)

breakup* (n) (MW)

checkup* (n) (MW)

cleanup* (adj, n) (MW)

drive-up* (adj) (MW)

hookup (n)

letup* (n) (MW)

makeup* (n) (MW)

pickup* (n) (MW)

setup* (n) (MW)

start-up* (n, um) (MW)

workup* (n) (MW)

U.S.-made (adj) instead of *American-made*

USDA Forest Service, *not* U.S. Forest Service; USDA Forest Service (USDA-FS as unit modifier). Try to use specific name of the forest service area; using *Forest Service* is acceptable after the first mention or to provide variety. Avoid using *Forest Service* if it could be confused for a state or county entity.

U.S. Geological Survey (n), USGS (um)

use

day use (n) (DSC), day-use (adj) (HFC)

heavy use (n) (DSC), heavy-use (adj)

high use (n) (DSC), high-use (adj)

land use (n, um) (DSC), land-use (adj)

light use (n) (DSC), light-use (adj)

low use (n) (DSC), low-use (adj)

multiple use (n) (DSC)

overuse (adj, n) (DSC)

peak use (n) (DSC), peak-use (adj)

public use (n) (DSC), public-use (adj)

special use (n) (DSC), *but* special-use (um)
underuse (n)
visitor use (n) (DSC), visitor-use (adj)

V

viewshed (n) Avoid; use *view(s)* or *scenery*.

visitor

visitor center *but* Mount Rainier Visitor Center
visitor contact (n) (DSC)
visitor-related (adj)
visitor services (n) (DSC)
visitor use (n) (DSC)

vocal-tagging (n)

volunteerism (n) (not voluntarism)

W

walkway (n) (MW)

wapiti *See* elk (HFC).

warehouse (n, v) (MW)

wash

washhouse (n) (MW)
washout (n); wash out (v)
washover (n, v) (AGI)

waste

waste disposal (n) (DSC)
wastewater (n, um) (MW)

water

water body (n) (DSC)
waterborne (adj) (MW)
watercourse (n) (MW)
waterflow (n) (MW)
waterfowl (n) (MW)
water hole (n) (MW)
waterline (n) (MW)
water oriented (pa); water-oriented (um) (DSC)
waterpower (n) (MW)
waterproof (adj) (MW)
water quality (n) (DSC)
waterscape (n) (MW)

waterside (adj, n) (MW)

water ski (n), waterskiing (n), water-skier (n),
water-ski (v) (MW)

water table (n) (MW)

–water

backwater (n) (MW)
breakwater (n) (MW)
freshwater (n, um) (MW)
groundwater (n) (MW)
lake water (n); lake-water (um)
meltwater (n) (MW)
ocean water (n); ocean-water (um)
rainwater (n) (MW)
salt water (n) (MW), saltwater (um) (MW)
seawater (n) (MW)
slack water (n)
springwater (n) (MW)
storm water (n, um) (DSC)
stream water (n); stream-water (um)
surface water (n, um) (DSC)
wastewater (n um) (MW)
well water (n), well-water (um) (DSC)
white water (n) (MW); white-water (um) (MW)

–way

byway (n) (MW)
drainage way (n); use *drainage* (n)
passageway (n) (MW)
riverway (n) (DSC)
walkway (n) (MW)

wayfinding (n) (DSC)

Web

Web address (n) (referring to URL of a Web site)
Web browser (n)
webcast, webcaster (n) (MW)
Web pages (n)
Web site (n) (MW)

–Web

World Wide Web (n) (MW)

well When used as part of a compound adjective (i.e., unit modifie), a hyphen is typically included.

well-intentioned (um, pa) (Gregg)
 well-known (pa, um) (MW)
 well-organized (um) (DSC), *but* well organized (pa)
 well-petrified (um), *but* well petrified (pa)
 well-sorted (um), *but* well sorted (pa)
 wellspring (n) (MW)
 well water (n) (DSC); well-water (um)
 well-written (um), *but* well written (pa)

west, western Lowercase compass directions; minimize use of capital letters except for specific regions (or popular place-names); the Pacific Northwest; the West is west; West Coast (HFC p. 20).

West Nile virus (n) (MW)

wetland (n) (MW) *not* wet land, (HFC p. 20)

western red cedar (n) (HFC p. 20)

wheelchair (n) (MW) *See* disabled (HFC).

Whig *See* American Revolution affiliations (HFC p. 20).

whites/white settlers Avoid (HFC p21); *see* Euro-American; *see* explorers.

white-tailed deer *not* whitetailed *or* white-tail deer (HFC p. 21)

white water (n) (MW); white-water (um) (MW)

–wide

coastwide (adj)
 communitywide (adj) (DSC)
 countywide (adj) (DSC)
 districtwide (adj) (DSC)
 Gulfwide (adj) (referring to Gulf of Mexico)
 industrywide (adj) (DSC)
 nationwide (adj) (MW)
 officewide (adj) (DSC)
 parkwide (adj) (DSC)
 regionwide (adv) (DSC)
 Service-wide (adv) (H) (referring to National Park Service)
 statewide (adj)
 systemwide (adj)
 trailwide (adj) (DSC)
 worldwide (adj, adv) (MW)

wild

wildfire (n) (MW)
 wildland (adj, n) (MW)
 wildlife (n, um) (MW)

wind

windblown (adj) (MW)
 windborne (adj) (MW)
 windbreak (n) (MW)
 windsurfing (n) (MW)
 windswept (adj) (MW)

wintertime (n) (MW)

within *In* might be all that is needed.

wood

woodburning (adj) (DSC)
 wood chip (n), wood-chip (um)
 woodshed (n, v)*

work

workday (adj, n) (MW)
 workflow (n) (DSC)
 workforce (n) (MW)
 workgroup (n) (DSC)
 workhorse (n) (MW)
 work hours (n)
 workload (n) (DSC)
 work order (n) (DSC)
 workout* (n) (MW)
 workplace (n) (MW)
 workroom (n) (MW)
 workshop (n) (MW)
 workspace (n) (DSC)
 workstation (n) (MW)
 workup* (n) (MW) (an intensive diagnostic study)
 workweek (n) (MW)

–work

fieldwork (n) (MW)
 groundwork (n) (MW)
 teamwork (n) (MW)

world heritage site “[Park name] is listed as a world heritage site, the principal international recognition for natural and cultural areas of global significance” (HFC p21).

world-renowned (um)

worldwide (adj, adv) (MW)

write-up* (n) (MW)

X

X-ray (n) (MW), x-ray (v, often capitalized)

Y

Yankee *See* Civil War (HFC p. 21).

year-round (adj, adv) (MW)

Z

zip code (n) (MW)

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